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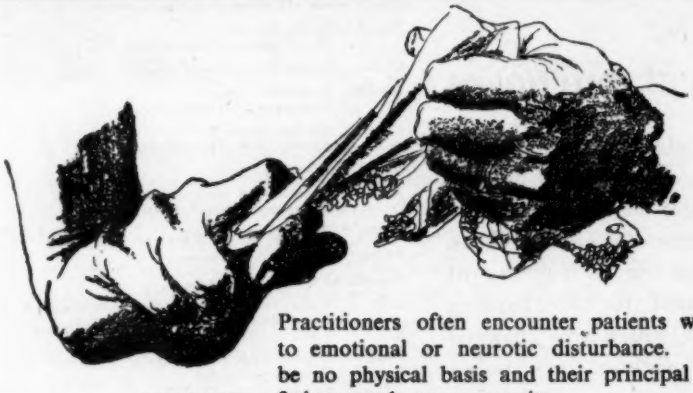

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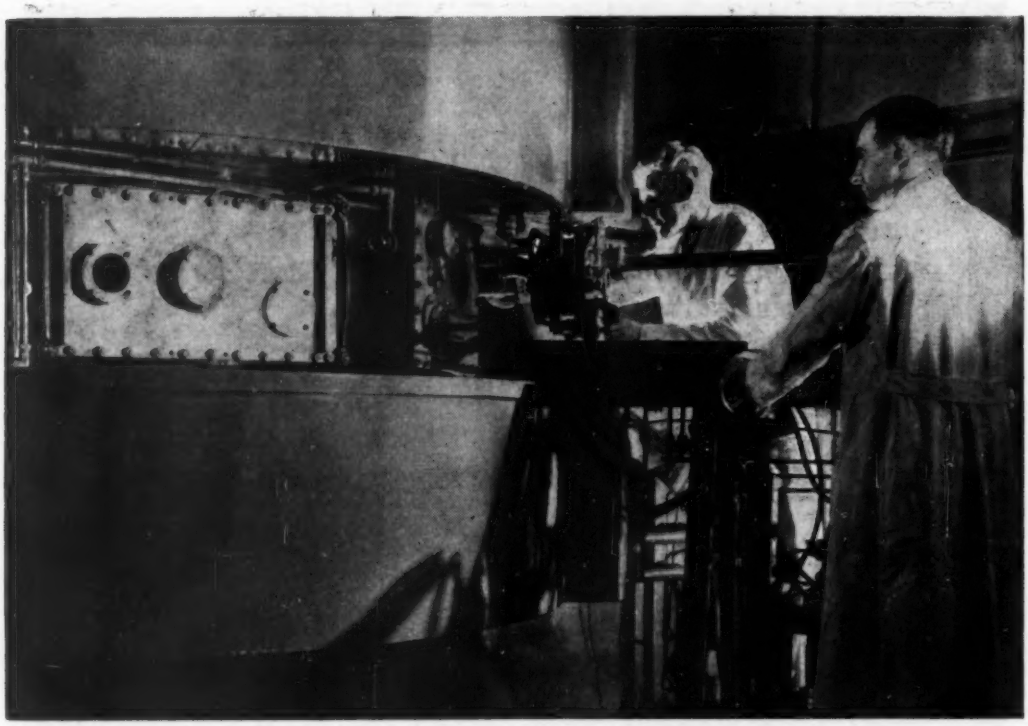

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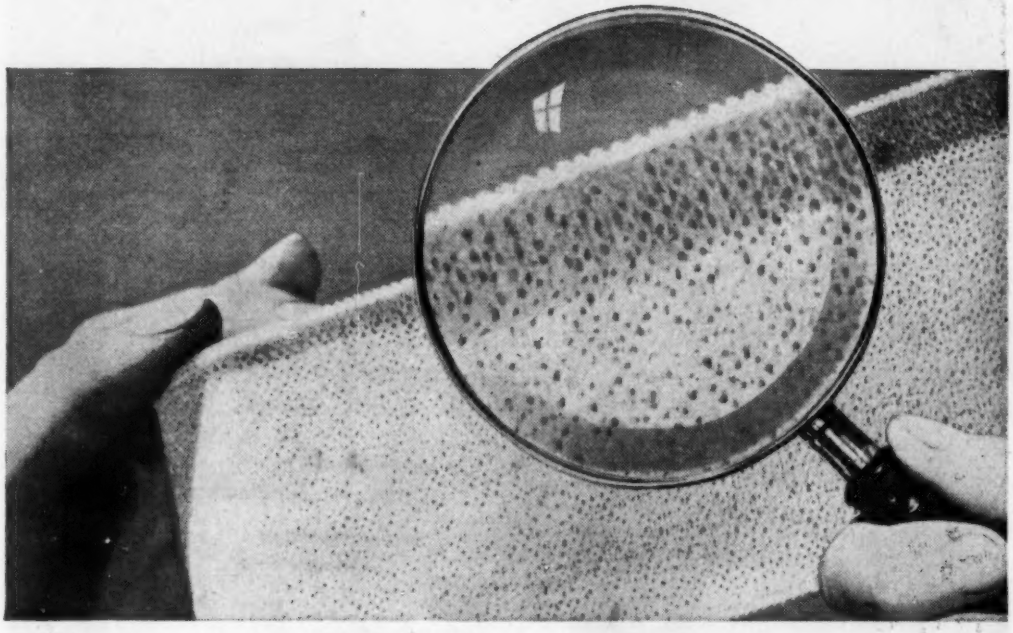

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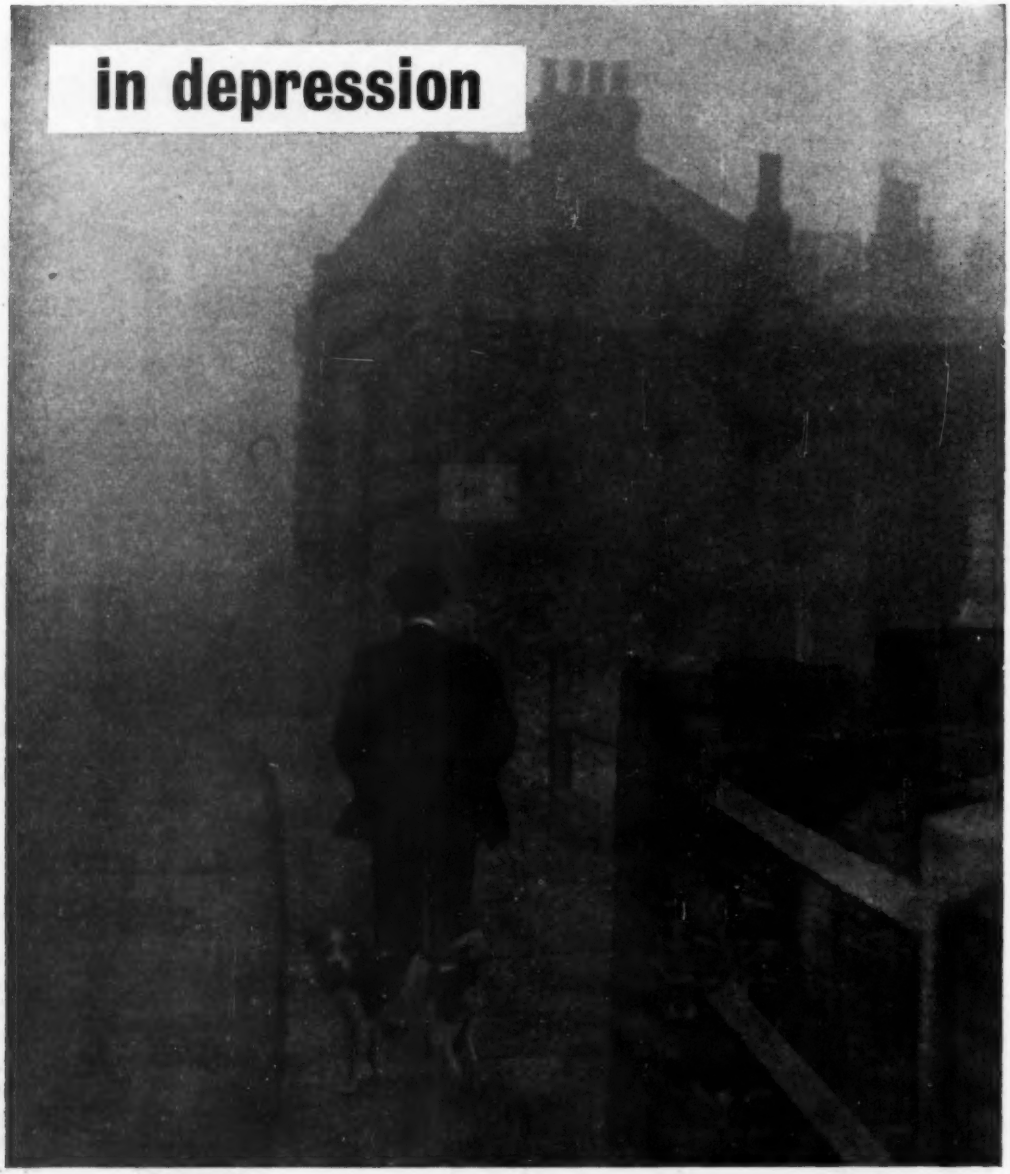

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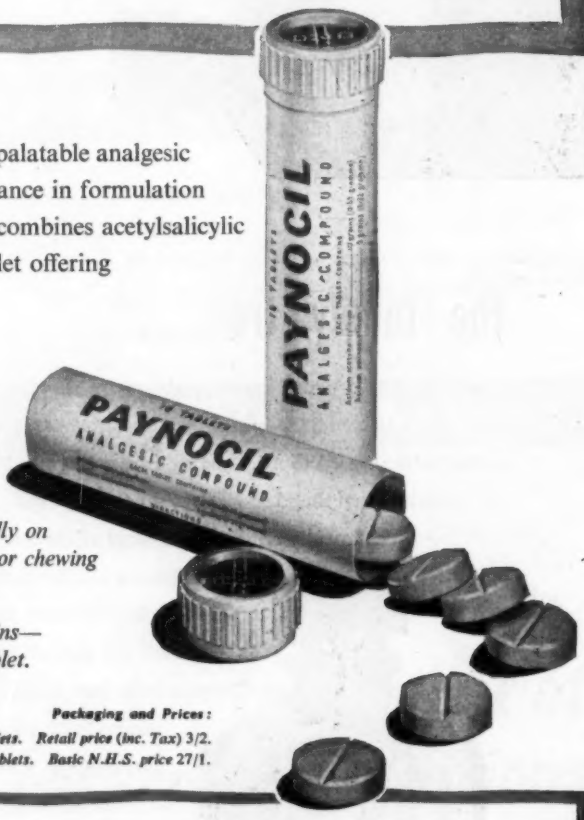

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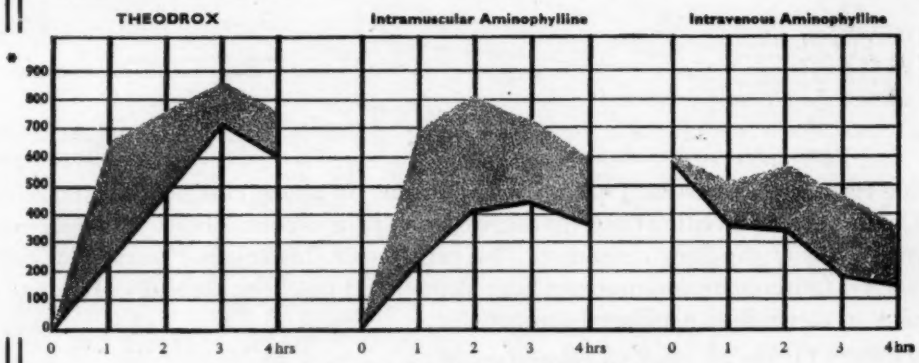

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REFERENCES

Administration of Aminophylline, *J. Amer. Med. Ass.*, 143 : 736, June, 1950. (This study does not refer to Theodrox.)

A New Approach to Increasing Tolerance to Oral Aminophylline. *Postgrad. Med.* 13 : 432, May, 1953. Abstracted ; *Practitioner* 171 : 328 (Sept. 1953)

Studies with Two New Theophylline Preparations, *Amer. J. med. Sci.*, 224 : 627, 1952.

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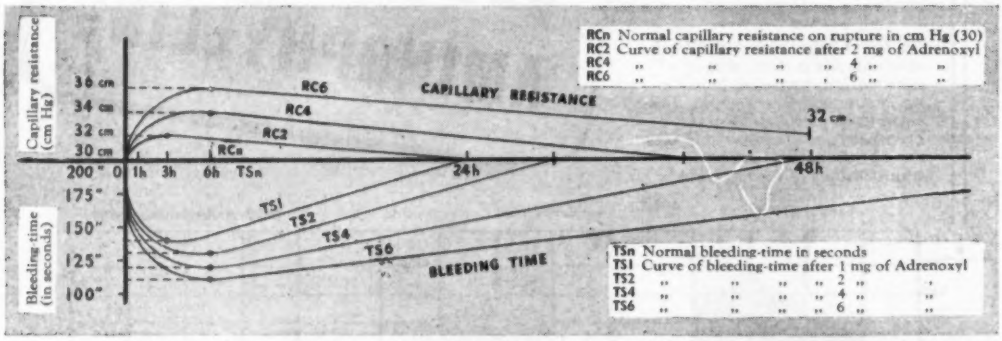

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BIBLIOGRAPHY

Hémostase en chirurgie plastique, emploi de la monosemicarbazone de l'adrénochrome. *Rev. L.O.R.* 1948, *No.* **7–8**, 380.

Observations cliniques sur l'action hémostatique de l'Adrénoxyl. *Ars. Medici.* 1948, **3**, 57.

L'Adrénoxyl comme hémostatique en Oto-rhino-laryngologie. *Ars. Medici.* 1949, **4**, 295.

La semicarbazone de l'adrénochrome. *Sem. Hóp.* 1950, **26**, 3347.

Recherches cliniques sur l'action hémostatique, dynamogène et vitaminique P de l'adrénochrome (Adrenoxyl). *Praxis.* 1951, **40**, 713.

Zur Frage der Blutungsprophylaxe bei bulbuseröffnenden Operationen. *Schweiz. Med. Woch.* 1952, **17**, 484.

La semicarbazone de l'adrénochrome: Hémostatique biologique à action tissulaire. *Rev. Stomat.* 1947, **48**, 616.

C.R. Soc. Biol. 1944, **138**, 875.

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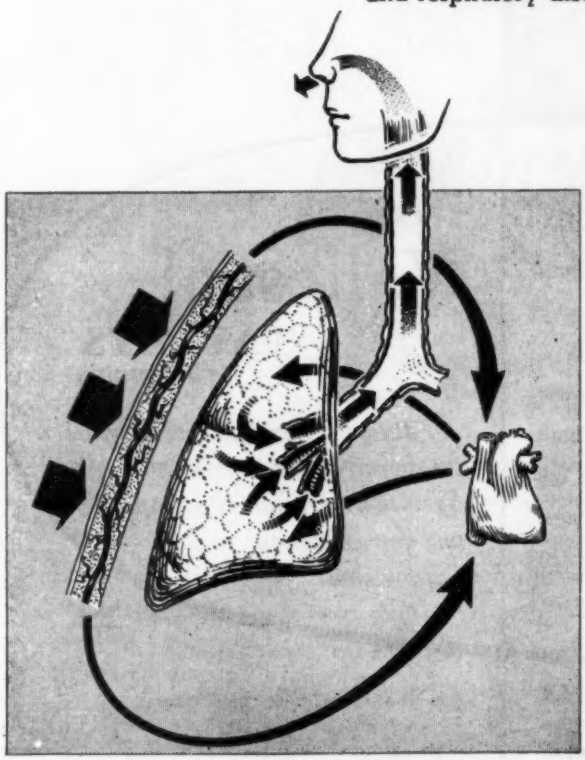

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Eucalyptol	2.0% w/w
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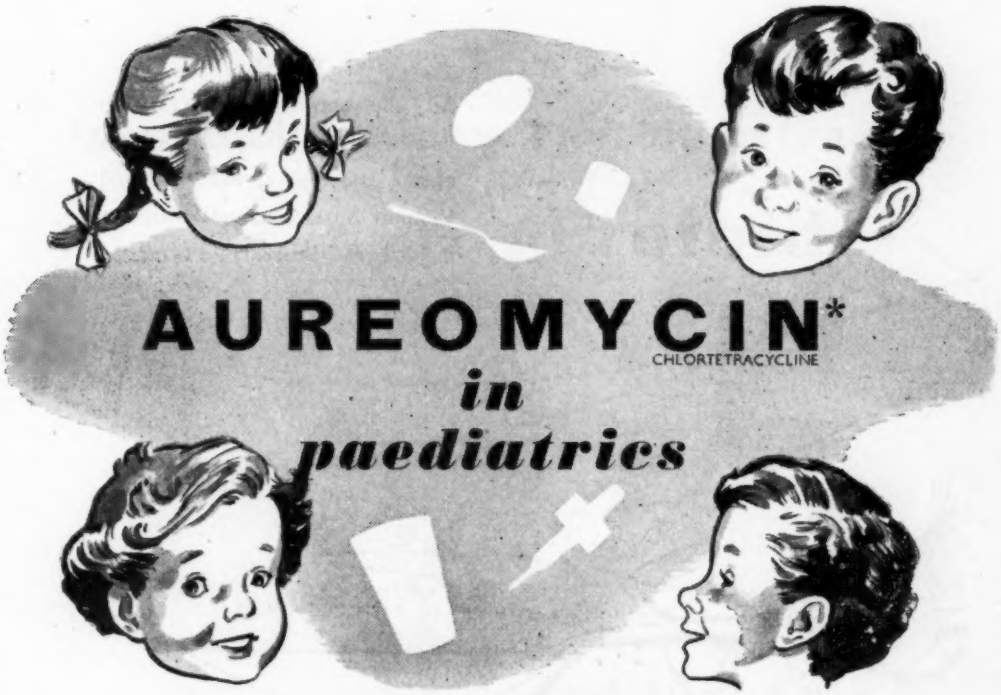

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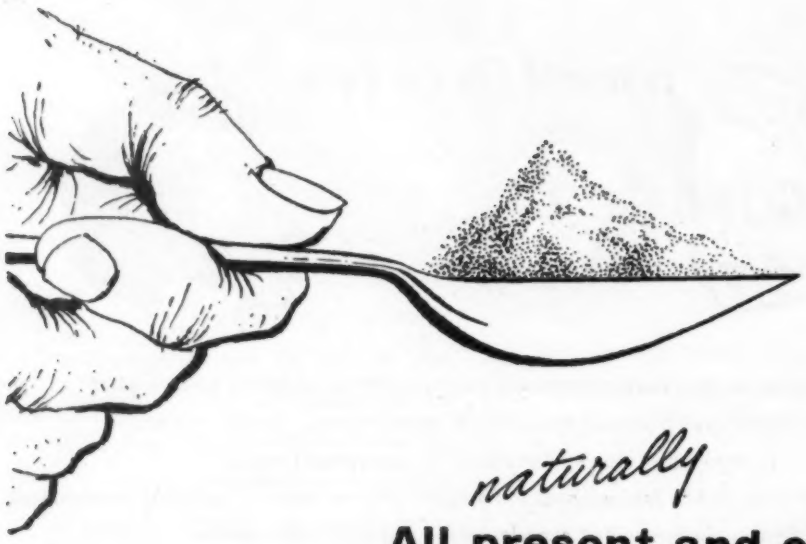

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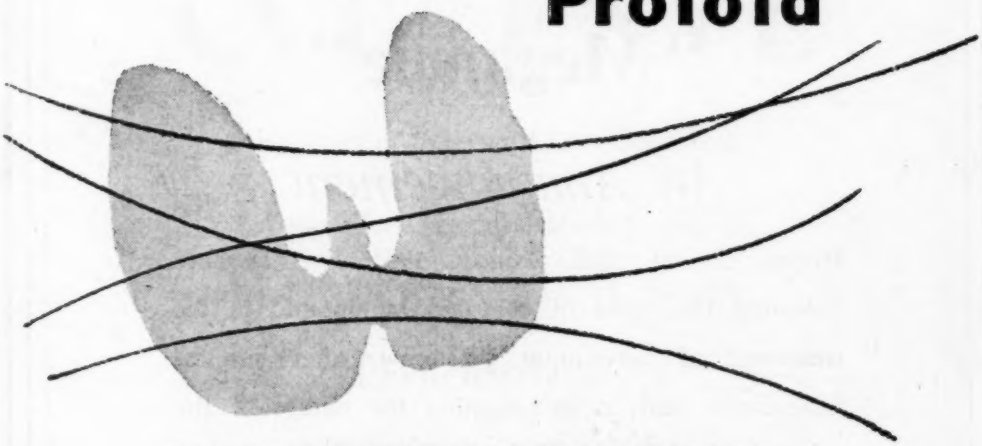

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THE HUMAN SOURCE OF TUBERCULOUS INFECTION IN CHILDREN

BARBARA BRIGGS *
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SENIOR LECTURER IN CHILD HEALTH IN THE UNIVERSITY
From the Department of Child Health, The University of Sheffield, and the Children's Hospital Unit, The United Sheffield Hospitals

IT is common knowledge that tuberculosis in children is a preventable disease; yet by the time children in England reach their fourteenth year some 45% of them have been infected with tuberculosis (Medical Research Council 1952). The mortality from tuberculosis in childhood has fallen rapidly in the last few years, largely as a result of improved methods of treatment, but the fall in tuberculosis morbidity has not kept pace with the fall in mortality (Lorber 1953). For this reason we have made a detailed investigation of the source of infection in a large group of tuberculous children. This was on similar lines to a smaller investigation of 150 children with tuberculous meningitis or miliary tuberculosis, which was presented by one of us to the British Pædiatric Association (Lorber 1950).

During the present investigation we were repeatedly impressed by the frequent occurrence of certain preventable modes of infection in children, and it is these which we have put together for the purpose of this paper.

Material and Method of Study

Of a total of 564 children with active intrathoracic or generalised tuberculosis there were 367 (65·2%) in whom the source of infection was determined. A really adequate search for the source of infection was made in 401 of these 564 children—the search including the whole household, together with persons who, on the basis of the history, appeared to be likely sources of infection. A human source of infection was finally discovered in 327 of these 401 children (81·5%) (see table). The children were either inpatients in the Children's Hospital at Sheffield between Jan. 1, 1947, and Dec. 31, 1952, or outpatients attending the tuberculosis contact clinic in the Children's Hospital between 1949 and 1952 inclusive. 181 of the 401 patients were admitted because of miliary or meningeal tuberculosis. 73 of the 401 children (18·2%) were under one year of age, and 101 (25·1%) were between one and two years of age. Information regarding the source of infection was collected up to and including Jan. 31, 1954. For the purpose of this study entire contact histories were sometimes re-assessed and the contacts re-examined with the help of chest physicians.

Direct evidence that a child has been infected by a certain tuberculous person can never be absolute. When we found, however, that an infected child had been in undoubted contact with a person suffering from active postprimary tuberculosis, or with a person with an open or potentially discharging tuberculous lesion, we regarded that person as the source of infection. Sometimes more than one such person was in contact with a child. In other cases the chest physician reported that a person in contact with a child had recently had an active focus which was now quiescent. If no other definite contact was discovered, then such persons were accepted as probable sources of infection. Hearsay evidence of contact with tuberculosis or of contact with a person with a chronic chest infection of doubtful ætiology was not accepted as evidence of contact with tuberculosis, nor were other children suffering from uncomplicated primary tuberculosis accepted as sources of infection.

* In receipt of a grant from the Tuberculosis Research Fund of the University of Sheffield.

Summary of Results

The source of infection was determined in 327 of the 401 children (81·5%) who were adequately investigated. It is known that in some of the children in whom no contact was found the infection was of bovine origin.

As one would expect, the younger the child the easier it was to trace the source of infection. In the adequately investigated families, the source of infection was found in 70 (95·9%) of 73 children under one year of age; in 86·1% of the 101 children aged one year; in 84·6% of 117 children aged two to four: and in 64·5% of 110 children aged five to fourteen. In some cases there were multiple contacts. The father had tuberculosis in 119 instances, the mother in 108, other relations in 143, and other persons in 46. It is apparent that most of the sources of infection were within the household, for over three-quarters of the contacts were parents or other persons living in the house.

Observations on the Results

From our knowledge of the source of infection in the above children, we have brought together some of the more important means at our disposal for preventing tuberculous infection in children. We have arranged these under headings, illustrating most of the headings by one or two stories to show the consequences of lack of attention to detail in the measures indicated. All these stories could be repeated many times. We do wish to emphasise that these stories are not given in any spirit of criticism; their sole purpose is to emphasise the importance of the measures described in the prevention of tuberculosis. They represent failures, and in giving them we are not at all unmindful of the tremendously valuable work of the tuberculosis services in the prevention of infection. The following are the measures which we wish to emphasise.

THE SOURCE OF INFECTION OF 564 CHILDREN WITH INTRATHORACIC OR GENERALISED TUBERCULOSIS
(Adequately and inadequately investigated families)

—	Contact found			No contact found
	Known beforehand	Discovered afterwards	Total	
Adequately investigated families (401)	281 (70%)	46 (11·4%)	327 (81·5%)	74 (18·5%)
Inadequately investigated families (163)	37 (22·7%)	3 (1·8%)	40 (24·5%)	123 (75·4%)
All families (564)	318 (56·3%)	49 (8·7%)	367 (65%)	197 (35%)

(1) *The avoidance of delay in radiological examination in the presence of symptoms suggestive of tuberculosis*

Though active tuberculosis in an adult can be asymptomatic, in our experience symptoms were usually present; but their significance was not realised and there was serious delay in arranging radiological examination. For example, a man was treated at home for "pneumonia" for six months, and apparently no doubt was felt about the diagnosis. It was only when his two-year-old boy was admitted to hospital with tuberculous meningitis that he was X-rayed, and found to have tuberculosis. A mother of two young children had had a cough for five years and had been treated for chronic

bronchitis. She was unduly tired during pregnancy, and it was some months after delivery before she was X-rayed on her own initiative by a mass-radiography unit, and found to have tuberculosis. By that time both her children had been infected.

(2) *Determined and persistent efforts to persuade a suspected contact to have a radiological examination*

One by one all 14 children of a family contracted tuberculosis and 2 of them died. The father had a chronic cough, but he refused an X-ray examination on the grounds that he was "too nervous" to have that done. No-one other than a health visitor had attempted to persuade him.

(3) *Notification*

Many tuberculous persons—children and adults—are not notified. Cases of tuberculous cervical adenitis, or of tuberculosis of the kidney, bones, or joints are particularly liable to be left unnotified. Quite often a case is not notified because of the erroneous belief that someone else has done it Sometimes notification is avoided because it is felt that such a step might expose the patient to a social stigma or handicap him in other ways, such as obtaining jobs, or in obtaining life-assurance policies after recovery. In other cases evidence of activity of the tuberculous process is in doubt. A positive tuberculin reaction as the sole evidence of tuberculous disease is not acceptable to the authorities as a reason for notification, although it is obvious that the notification of young children with a positive tuberculin reaction may well lead to the discovery of an open case of tuberculosis. Sometimes notification is missed simply by default. There would seem to be good grounds for establishing a modified form of notification, which would not expose the patient to any possible disadvantages, and yet would allow the chest physician to examine for the source of infection and protect other contacts.

(4) *Continued supervision of adults who are thought to have inactive tuberculosis*

A diabetic was examined at a chest clinic when his five-year-old daughter was notified as a case of primary tuberculosis. He was found to have an "inactive apical nodular fibrosis" and was discharged from the clinic. Subsequently he developed backache and had hæmoptyses, but he was not re-examined until another child, who had not been born when the man was first seen, developed tuberculous meningitis. Another four-month-old baby in this family also became infected and developed meningitis. The father was now found to have advanced tuberculosis, and he died in spite of treatment.

There is often delay in the diagnosis of tuberculosis in diabetic patients. The special liability of diabetic subjects to develop tuberculosis is not always remembered, so that routine X-ray examination is not done.

(5) *The treatment of "sputum-negative" adult sufferers as potentially infectious if they are in contact with children*

We frequently found that children had become infected with tuberculosis because it was assumed that the adults with whom they were in contact were non-infective because the sputum was "negative." In some cases only a single specimen had been examined. As a result of reliance on this laboratory finding, the children were not given protection by B.C.G. Many of the patients, furthermore, were under the impression that they had not got tuberculosis at all.

A non-tuberculous child had a chronic medical ailment necessitating visits to hospital twice weekly for several months. His mother complained that she and her child had every week to share an ambulance with adult patients who were being taken to a sanatorium for refills for their artificial pneumothorax. This statement was confirmed by the local authority, who assured us that the patients were "sputum-negative."

(6) *Determined efforts to avoid the dissemination of tuberculosis by children from neighbouring houses visiting the homes of infected adults to watch television, or to play with their children, or for other purposes*

We know of several instances of families of chronically ill patients acquiring a television set for their amusement. Unfortunately the children in the street get to learn about it and gather round the set. As an example of this, we quote a letter from a chest physician in reply to our inquiry about the contacts of a boy with tuberculous meningitis:

"... the mother and father in this case have been X-rayed and are normal. There seems little doubt that this child probably became infected at a neighbour's house where he frequently went in to see the television and in which house we have a positive case of tuberculosis. As a matter of interest, we have another boy of thirteen with a pleural effusion, who also went and enjoyed this television."

(7) *The prevention of tuberculin-negative children from acquiring tuberculosis while attending chest clinics, contact clinics, or hospital outpatient departments*

Children may contract tuberculosis while attending chest clinics and hospitals for contact examinations or other reasons. In many such clinics there are no facilities for keeping uninfected children away from other patients attending such clinics. Furthermore, adults with open tuberculosis often have to take their children for examination, because there is no-one else to take them. We think we know of several examples of infection by this method, but it is impossible to prove such infections with certainty.

An example of this was brought to light when an infant was referred to one of us from an infant-welfare clinic because of a behaviour disorder. It transpired that the mother had chronic pulmonary tuberculosis and had been in sanatoria on more than ten occasions. Her own child was taken away from her for three months and kept in a nursery until B.C.G. vaccination had been completed. After that she regularly attended an ordinary welfare clinic with her baby and freely mixed with other mothers and babies who had not had the benefit of B.C.G. vaccination and who were unaware of the danger to which they were exposed. The attention of the medical officer of health was drawn to this case. He investigated the matter further and found that 34 sputum-positive mothers attended with their infants the ordinary welfare clinics in his area and freely mixed with other infants. This practice has now been discontinued.

We are fully aware of the difficulty of preventing uninfected children from coming into contact with infected adults in chest clinics, but it can nearly always be done with proper arrangements and foresight.

(8) *Full and adequate instructions of infected adults in elementary hygiene*

When tuberculous adults had to wait for admission to a sanatorium, or were discharged from a sanatorium after treatment, we often found that they had been given no instructions in elementary hygiene as regards their sputum and did not realise that they were suffering from an infectious disease. A young woman with pulmonary tuberculosis and tuberculous laryngitis kindly offered to look after a young baby while the parents went out to work, not knowing that she was doing any harm. The child contracted miliary tuberculosis.

The responsibility for health education is partly that of the chest physician, partly that of the family doctor, and partly that of the health visitor. It is a matter of opinion whether there should be special tuberculosis health visitors or not, but it would seem that there is a place for more intensive training of health visitors in this important aspect of tuberculosis prevention.

(9) *Instruction of parents in the importance of preventing their children from coming into contact with known sufferers from the disease*

A grandfather was admitted to a sanatorium with tuberculosis. While an inpatient there he repeatedly visited his daughter's home (which was not his own home), and as a result he infected his seven-year-old grandchild, who developed miliary tuberculosis.

(10) *The avoidance of unnecessary contact of an infected adult with children*

We often found that tuberculin-negative infants and children were allowed to visit relations in tuberculous wards of hospitals and sanatoria. This could certainly be avoided. Patients under treatment were allowed to go home for weekends and holidays, using public transport, and infect their children or the children of friends or relatives who had not been protected by B.C.G.

(11) *Protection of tuberculin-negative children by B.C.G. when they are known to be about to be exposed to tuberculosis, or when further contact cannot be prevented*

Adults were discharged from sanatorium after treatment without steps being taken to prevent contact with children, or without protecting the children by B.C.G. Commonly, when an adult was found to have tuberculosis, no *immediate* effort was made to determine whether children in the family were still tuberculin-negative, in order that they could be immediately removed from further contact and given B.C.G. Instead further continued contact was allowed, even nursing mothers being allowed to continue to breast-feed their babies.

(12) *Adequate segregation of children from contact while being given B.C.G.*

We found that some children were undergoing B.C.G. vaccination without segregation from an infectious adult. Segregation is irksome and occasionally difficult to achieve, but it is almost always possible. Failure to segregate a child from contact for six weeks before vaccination and until tuberculin conversion after vaccination exposes the child to infection and gives the parents a false sense of security. It is a practice which brings B.C.G. vaccination into disrepute.

Discussion

We have made no attempt to give a comprehensive account of all the various measures which are important in the prevention of tuberculosis in children. We have not discussed, for instance, the provision of safe milk. We have, however, picked out from our experience certain measures which we think need re-emphasising, in that we so often see tragedies because these measures have not been applied, or because there was delay in their application. We are convinced that a greater sense of urgency is needed. When a child is notified as having acquired tuberculosis every possible effort should be made *immediately* to determine the source of infection, *however old he is*. That this is very well worth while is convincingly demonstrated by our figures. The source of infection was demonstrated in 81% of 401 children who were "adequately" investigated—thus making it possible to treat the infected adult, to prevent further dissemination of infection among children and others, and to protect immediate contacts by B.C.G. if they had not already been infected.

The fact that the source of infection could be found in 95·9% of the children under one year of age is of particular importance. It is of equal importance that in the older age-group—namely in children five to fourteen years old, the source could be found in 64·5% of the cases. The importance of this latter fact lies in the attitude, so often found, that in the case of the older child the possible sources of infection are so numerous that it is hardly worth while making the effort to look for them. Our figures belie that idea. We think it extremely likely, furthermore, that with still more vigorous efforts our figures for the frequency with which the source of infection was found could be quite considerably improved. We think that the figures would be improved by examining other contacts, when examination of the immediate family has proved negative.

Just as it is essential, when an infection in a child is notified, to look immediately for adult contacts, so it is essential, when an adult is found to be infected with tuberculosis, to conduct an *immediate* examination of all child contacts, so that further contact can be prevented if the child is still tuberculin-negative, and he can be protected by B.C.G. if subsequent contact is unavoidable. A real sense of urgency is vitally necessary if further tuberculosis is to be prevented.

We have re-emphasised the importance of instructing infected patients in the elements of hygiene with regard to their sputum, and in particular with regard to their infectivity. All too often one sees tragedies in the way of serious infections in childhood which have arisen simply because an adult with tuberculosis was unaware that he was infective, particularly to children.

The value of the work of the tuberculosis services is reflected by the remarkable fall of childhood tuberculosis mortality in Sheffield (Lorber 1953). It was shown that the mortality in childhood from tuberculosis was lower in Sheffield in 1951 and 1952 than in any other city. (The mortality in 1953 remained the same as in 1952—namely, 1·8 per 100,000.) We draw cases, however, from a very wide area, and there is still a great deal of morbidity due to tuberculosis in Sheffield and in the surrounding region. Much of it can be prevented by further vigorous and determined efforts.

Summary

A search was made to determine the source of infection in 564 tuberculous children, suffering from intrathoracic, miliary, or meningeal tuberculosis. The source of infection was determined in 367 children (65·2%), but what was considered to be an adequate search for a contact was made in only 401 cases.

In the 401 adequately investigated cases the source of infection was found in 327 children (81·5%). It was found in 95·9% of 73 children under one year of age, in 86·1% of 101 children aged one, in 84·6% of 117 children aged two to four, and in 64·5% of the 110 children aged five to fourteen.

It is very important to notify all cases of childhood tuberculosis, so that an intensive search for the source of infection can be made. This enables the infected adult to be treated, and other child contacts to be protected from infection by B.C.G. or other means. It is also important to examine all child contacts immediately when an adult is found to have tuberculosis, so that tuberculin-negative children can be segregated until they have been protected by B.C.G. We feel strongly that a greater sense of urgency is required in these preventive measures.

Other anti-tuberculosis measures which require far more attention are:

(1) Chest X-ray examination of all adults with symptoms that might be due to tuberculosis.

(2) Chest X-ray examination of all adults who may be a source of infection.

(3) Continued supervision of adults whose tuberculosis is supposed to be inactive. Former patients who are "sputum negative" should be regarded as potentially infectious if they are in contact with children.

(4) Prevention of contact between unprotected children and adults with tuberculosis. Tuberculin-negative children should be excluded from tuberculosis wards of hospitals and sanatoria at visiting-time.

(5) Instruction of adult patients in the infectivity of their condition and in elementary hygiene.

We have also mentioned the value of B.C.G. for children who cannot permanently be prevented from coming into contact with infected adults.

We wish to thank all the numerous chest physicians from a wide area who have taken part in the search for contacts of affected children. We are particularly indebted to Dr. H. Midgley Turner, chest physician at Sheffield, for his great help and for reading and criticising this paper: without his aid the investigation would have been impossible. To Dr. Llewellyn Roberts, medical officer of health for Sheffield, we are grateful for reading this paper, and for his coöperation. Prof. Alan Moncrieff kindly read and criticised the paper. We also thank all the health visitors who have done so much essential work in the search for contacts.

REFERENCES

Lorber, J. (1950) *Arch. Dis. Childh.* **25**, 209.
— (1953) *Brit. med. J.* ii, 1122.
Medical Research Council (1952) *Lancet*, i, 775.

THE SPECIAL SIGNIFICANCE OF CONCOMITANT GASTRIC AND DUODENAL ULCERS *

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THOUGH duodenal and gastric ulcers have much in common, causing similar symptoms and having similar histological appearances, there are quite striking differences between the sorts of people who are attacked by the two lesions. Not only are there well-known variations in age, sex, and racial distribution, but also the patterns of gastric secretion and muscle tone exhibited by duodenal and gastric ulcer patients lie at opposite ends of the scale; for, whereas duodenal ulcer develops on a basis of hypersecretion of acid, hypertonicity, and rapidity of gastric evacuation, gastric ulcer is associated with a rate of acid secretion below (on the average) that of normal subjects, and with stomachs which are sagging, sluggish, and slow in emptying.

That duodenal and gastric ulcers may nevertheless be sometimes found together has been held by some to be evidence of common ætiological factors, for concomitance is twice as frequent as it should be on chance alone. Indeed, if they have similar origins, gastric and duodenal ulcers might be expected to occur together not infrequently in persons whose anatomical and functional characteristics lay midway between those associated with each ulcer alone. But these are not the sort of people who get such dual lesions.

My own opinion, however, is that, whereas the main cause of duodenal ulcer is disproportion between the amounts of acid and alkali reaching the duodenal bulb, the main cause of gastric ulcer is gastric hyposecretion, with its attendant hypomotility. On this basis one would expect ulcers of the two organs to be mutually exclusive, and in cases of concomitance some special factor would have to be at work. The present investigation was undertaken to discover what this factor might be.

Incidence of Concomitant Ulcers

Though single instances had been recorded previously (Mix 1913, Bonchut and Durand 1913), Sir David Wilkie (1926) seems to have been the first to draw attention to the comparatively frequent coexistence of ulcers in stomach and duodenum. He reported that in a series of 300 of his own patients he had found combined ulcers in 42, 16% of those with duodenal ulcers also having gastric ulcers and no less than 53% of the 79 gastric ulcers being associated with duodenal ones. The burden of Wilkie's paper was his suggestion that undiagnosed concomitant gastric ulcer might be a reason why gastro-enterostomy did not always relieve symptoms attributed to a duodenal ulcer.

Little attention was paid to Wilkie's figures, striking though they were; indeed even to the present day the coexistence of gastric and duodenal ulcers seems to have struck no-one as remarkable, and scant reference to it is to be found in the most recent and comprehensive works on peptic ulcer.

Hurst and Stewart (1929) described simultaneous chronic ulcers or scars in both organs as "distinctly infrequent" and referred to 4000 post-mortem examinations at which 173 chronic gastric and 230 chronic duodenal ulcers were found, but of which only 21 revealed associated ulcers (5·5%). They added that these figures were difficult to reconcile with those of Wilkie.

There is no doubt, however, that Wilkie has not been alone and that the experience of many other surgeons has continued to be different from that of physicians and radiologists as well as that of pathologists. This may be because concomitant ulcers are more numerous among patients whose symptoms are severe and recalcitrant and who are therefore referred for operation.

Some 10–15% of peptic ulcers, it is said, are not detectable radiologically, and I have myself operated upon 14 patients with peptic ulcers which had not been found on repeated X-ray examination—including one with both a gastric and a duodenal ulcer. The effect of missing a proportion of ulcers at radiography is to diminish the apparent frequency of concomitant ulcers. For example, if 15 ulcers were missed among 100 patients, 10 of whom had both kinds of ulcer, the apparent rate of concomitance would be reduced from 10 to 8%.

Though physicians tend to see the earlier lesions and surgeons the late ones, the greater frequency of concomitant ulcers in surgical practice cannot at first sight be explained by the longer duration of the illness; for the proportion of ulcer cases with a double lesion is lowest at necropsy. Nowadays perhaps most patients with this condition lose their stomachs before they reach the post-mortem room, but this was certainly not so in 1929 when Hurst and Stewart reported. The discrepancy probably arises through the discovery, after death, of many small (as well as some larger) solitary ulcers whose existence was not suspected during life; and the concomitant ulcers (most of which will already have been found clinically) form a smaller proportion of the pathologist's bigger total. The figure for concomitance obtained by pathologists before the period of widespread gastrectomy is likely to be the truest one for the living as well as for the dead.

TABLE I—AGE AND SEX DISTRIBUTION

Age-groups	Numbers	%
Under 30	2	2
30–39	13	11
40–49	34	29
50–59	43	36
60–69	19	16
70–79	7	6
Unknown	1	1

Male: 96 (81%). Female: 23 (19%).

The sex-distribution is more like that for duodenal ulcer than that for gastric ulcer. The average length of history was 15 years and the average age at onset of dyspepsia was about 32.

The fact that concomitant ulcers are commoner in gastrectomy specimens than at necropsy could not be expected to have struck the pathologists, since the duodenal lesion is often unrecognisable as such even before it leaves the operating-theatre. Many a stomach removed for a duodenal ulcer which is obvious to the surgeon at laparotomy is later reported as showing "severe antral gastritis but no ulcer."

* This investigation was begun in 1948 during the tenure of a Leverhulme research scholarship from the Royal College of Surgeons.

TABLE II—ORDER OF APPEARANCE OF THE LESIONS

—	Numbers	%
No X-ray evidence of either ulcer	6	5
No dependable evidence of position of first ulcer	28	24
Evidence of gastric ulcer found first	6	5
Evidence of duodenal ulcer found first	79	66

The Present Series

Among my own 311 patients operated upon for peptic ulcer 29 (9%) have had lesions of both stomach and duodenum. 1 in 7 duodenal-ulcer patients has also had a gastric ulcer and 1 in 4 gastric ulcers has been associated with a duodenal one.

Franklin (1954), in a longer series, has observed similar proportions, though in other published series of operation cases where figures for concomitant ulcers have been given they have varied widely and have commonly been nearer 1 in 20, corresponding with what may be the true prevalence as shown by the earlier post-mortem data. Perhaps, indeed, in a large series of gastrectomies, the proportion of double lesions may be regarded as an index of the average severity of the cases referred to the surgeon concerned.

For the purpose of this investigation, my own group of 29 cases has been supplemented by a further 90 made available to me by my colleagues. Sex and age distribution were as shown in table I.

Order of Appearance of the Lesions (table II)

In 28 cases both the duodenal and gastric lesions were found when the patient was first investigated (or, if earlier radiographs had been taken, these could not be traced). In 6 cases radiography never showed either ulcer, and there was no dependable evidence as to which had developed first.

In 79 of the remaining 85 cases, the duodenal ulcer was discovered first, either by X-ray examination or because it perforated. Review of early X-ray pictures, on which only one ulcer was reported, has not been possible in all cases, but 43 have been reconsidered in the light of later developments, and no hint of a gastric ulcer has been found in any of them.

In only 6 patients was the gastric ulcer detected by radiography before any suggestion of duodenal ulcer was observed. Reappraisal of the pictures in these cases revealed the appearances of absolute normality of the duodenal cap in none, though the irregularities were small and might well have been thought unconvincing. In 5 of these cases an old healed duodenal scar was found at operation.

21 patients (18%) had had perforations in the past, and all these had been duodenal.

Secretion Pattern

That it is patients of the duodenal-ulcer type and not those of the gastric-ulcer type who develop combined ulcers would be expected from the fact that it is usually, if not always, the duodenal ulcer which appears first. This is further confirmed, however, by secretion investigations. The majority of those with two ulcers who were suitably investigated showed evidence of acid hypersecretion, and in some cases this was gross (table III and fig. 1). In a number of cases it was noticed that though the volume and total acidity of the juice was high, free acid was low or absent, signifying a large degree of intragastric buffering. This is characteristic of gastric retention and conformed with my observation that pyloric stenosis had been a feature of many of my own cases of concomitant ulcers.

Gastric Emptying

At fluoroscopic observation of gastric emptying, it is seen that barium passes through the pylorus ahead of each wave of peristalsis, and that this happens whether or not these waves meet across the lumen of the antrum.

TABLE III—ACID SECRETED AT NIGHT

Milli-equivalents free HCl in bulked all-night juice	Percentages in groups				
	176 D.U.	25 D.G.U.	30 Pyl. st.	80 G.U.	30 Controls
Achlorhydric ..	0	24	30	42	40
0–9	30	16	23	40	47
10–19	27	24	20	5	7
20–29	14	20	10	6	..
30–39	9	4	3	4	..
40–49	9	8	3	2	3
50–59	3	..	..	1	..
60–69	1	..	..	..	3
70–79	3	..	3	..	..
80–89	2	4	7	..	..
90–99	1	..	..	..	..
100–109	1	..	..	..	..
110–	1	..	..	..	..

D.U. = duodenal ulcer. G.U. = gastric ulcer.
D.G.U. = duodenal and gastric ulcer. Pyl. st. = pyloric stenosis.

Patients with concomitant gastric and duodenal ulcers are seen to have secretion patterns between those of patients with duodenal ulcers and those of patients with well-established pyloric stenosis and less like that of patients with gastric ulcers.

But when they do not do so it is evidently impossible for them to exert much pressure; and the pressure gradient required to cause the barium to pass through the pylorus must be produced mainly by a difference in tone between stomach and duodenal cap. As the wave of peristalsis reaches the duodenal cap and begins to affect it, the pylorus closes and the cap contents are therefore forced on into the rest of the small bowel. The mechanism is not unlike that of the heart—the stomach resembling a giant auricle, the duodenal cap behaving like a little ventricle going into systole and diastole, and the pylorus taking the place of the mitral valve.

From these observations it is not unreasonable to argue that an ulcer or scar involving the pylorus or any part of the duodenal cap is bound to reduce the efficiency of gastric emptying to a greater or lesser degree. It is well known that duodenal ulcers occur in persons whose stomachs show excessive vigour and activity of all kinds, muscular as well as secretory, and that before an ulcer becomes established they display rapid gastric emptying. Initially, the exaggerated gastric tone may compensate for incomplete cap diastole due to scar, but later the gastric emptying becomes slowed, entering first the range regarded as normal and then that classed as gastric retention.

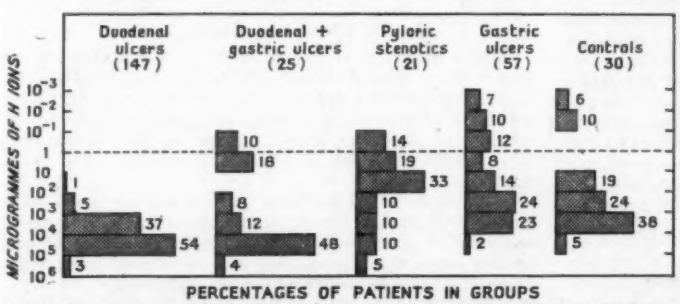

Fig. 1—Microgrammes of ionised hydrogen in whole of gastric night secretion. The figures for the concomitant-ulcer group are seen to lie between those for duodenal ulcer and for pyloric stenosis.

Gastric Retention

Pyloric stenosis and chronic gastric dilatation having been noted in a number of cases of concomitant ulcers, retro-

spective analysis of all the others from this point of view was next undertaken.

In 36 cases this was unrewarding. Though even a small duodenal lesion may slow down gastric evacuation markedly, quite a large and callous one may give no certain evidence of having done so. Many of these 36 patients had complained of vomiting and fullness during attacks, but none had reported regular and copious vomiting, none had been noted to have evidence of a dilated stomach or a succussion splash, and of none did the radiologist happen to have estimated the emptying-time. For what it is worth, 29 of the 36 had had gruel or histamine test-meals, and these showed to a greater or lesser extent the "climbing" type of curve said to indicate gastric retention.

In the remaining 76 patients (64%) there was incontrovertible clinical and radiological evidence of gastric retention, and in 39 (33%) well-marked pyloric stenosis was found and remarked upon at operation.

Thus 64% of the patients with concomitant ulcers unquestionably had gastric retention, and most of the rest may have had it.

The notes of all adult patients who had been in the Royal Free or Hammersmith Hospitals with pyloric stenosis during the past ten and past sixteen years respectively were now reviewed. This diagnosis had been recorded for 331 patients and of these 52 (16%) had also had gastric ulcers, either found at radiography or discovered at operation or necropsy. Some (1 in 5) of the latter had not been revealed by X-ray examination, and it is notorious that gastric ulcers are more difficult to demonstrate radiologically when there is pyloric stenosis and gastric retention. When only patients who underwent surgery or who came to necropsy are considered, the proportion of those with gastric ulcers rises to 19%.

The evidence suggests that in at least 2 out of 3 cases of concomitant ulcer gastric retention is a main cause of the ulcer, and that of every 6 patients admitted to hospital with pyloric stenosis a gastric ulcer has already developed in 1. One is naturally led to question whether the slow rate of gastric emptying associated with this disease may not be a factor in the ætiology of all gastric ulcers.

Operative Findings (table IV)

91% of the gastric ulcers were active, many were huge, 10 were bleeding, and 1 was perforated as well as bleeding.

TABLE IV—FINDINGS AT OPERATION (110 CASES)

Duodenal ulcer	Gastric ulcer	Numbers	%
Healed	Healed	3	3
Active	Healed	6	5
Active	Active	26	24
Healed	Active	75	67
Stenosis	Active	32	29
Stenosis	Healed	1	1

The most frequent combination found (67%) was that of an active gastric ulcer and a healed, scarred, often stenosed duodenal lesion. Both ulcers were active in 22%, both were healed in 5%, and in the remaining 6% an active duodenal ulcer was associated with one or more scars on the stomach. The great frequency of healed, scarred duodenal lesions conforms with the other evidence that this is the older lesion. Just as clinical pyloric stenosis is more often seen in patients with old healed ulcers than with open ones, so gastric ulcers are seen more frequently in association with healed than with active duodenal lesions.

Further Evidence from Additional Special Cases

In 2 cases of gastric ulcer no sign of old duodenal ulcer was seen but the pyloric ring was observed to be quite remarkably thick and tight. The specimens were considered to be instances of adult hypertrophic pyloric stenosis (fig. 2).

Fig. 2—Three-quarters of a stomach resected for chronic gastric ulcer. The specimen shows the ulcer and massive hypertrophy of the muscle of the pylorus which had the feel of cartilage. (In a shrunken, fixed specimen this degree of thickening would not, of course, have been remarkable.) (Tracing of a photograph.)

6 cases have been collected in which gastro-enterostomy had been performed some years ago for duodenal ulcers and in which recurrent ulcers had occasioned further surgery. All patients were found to have gastric ulcers, all had old scarred duodenums, 3 had active jejunal ulcers and 3 were observed to have scarred narrowed stomas and dilated stomachs.

Another patient had been submitted to gastro-enterostomy for duodenal ulcer in 1947. In 1949 this had been undone. Four months later I performed an emergency gastrectomy for a bleeding gastric ulcer and a scarred duodenum was observed. The stomach distended with blood was unusually large. This patient had bled fifteen times.

Having begun to suspect that pyloric obstruction might cause a gastric ulcer and having observed the frequency with which prolonged gastric retention followed vagotomy, I wrote in 1947 "the author believes hypomotility to be a main ætiological factor in a proportion of ulcers to the left of the angulus. . . . It may well be that gastric ulcer will prove to be one of the late complications of vagotomy in man" (Johnson 1948). Since this melancholy prediction, a number of such ulcers following vagotomy have been reported and 4 have come within my own experience. All 4 patients had healed duodenal ulcers with much scarring, and all 4 had gross delay in gastric emptying and greatly dilated stomachs.

It might be thought that the acid hypersecretion characteristic (as is seen) both of patients with duodenal ulcers and those with concomitant ulcers was a factor in the ætiology of the gastric ulcer, and indeed this may be so. However one final case may show that it is not an essential one, for this patient had a carcinoma of the antrum obstructing the pylorus, a benign gastric ulcer proximal to it, and achlorhydria.

Peptic Ulcer and Hiatus Hernia

The association of peptic ulcer with hiatal hernia is now well recognised (Belsey 1952). Harrington attributes coincident gastric ulcer to friction on the lesser curvature of the stomach as it passes back and forth over the margin of the œsophageal hiatus of the diaphragm. The coexistence of duodenal ulcer has not been explained.

In a series of 39 patients with hiatal hernias I have met 4 with gastric ulcers, 4 with duodenal ulcers, and 1 with both a gastric ulcer and a healed, scarred duodenal ulcer; and this association can be linked with what has emerged concerning concomitant ulcers.

Hiatal hernias are of two main kinds—rolling or para-œsophageal and sliding or "short œsophagus type." The latter is associated with reflux œsophagitis, diagnosable

clinically and by œsophagoscopy ; the former is usually not.

Since hiatus hernia is supposed to undermine the competence of the œsophago-gastric valve or sphincter, it is generally thought to be the cause of the reflux œsophagitis. For a number of years the shortness of the œsophagus and the accompanying thoracic stomach were regarded as congenital anomalies. But a congenitally misplaced organ ordinarily draws its blood-supply from a nearby source : indeed the short, tight vessels often preclude surgical alteration of its position. Such a state of affairs is not seen in hiatus hernia, and on one occasion I was able to reduce with ease, at operation, a hernia in which the whole stomach and most of the transverse colon occupied the right side of the chest. It is now generally accepted that most if not all short œsophaguses are acquired.

Theoretically three groups of factors could contribute to formation of a hiatus hernia ; those which relax the margins of the hiatus in the right crus, those which affect the pressure gradient between abdomen and thorax, and those which control tone in the longitudinal muscle of the œsophagus. In the rolling type of hiatus hernia in which the cardia remains below the diaphragm, evidently only the first two factors can have operated. In the sliding type I believe œsophageal spasm to be paramount. I have observed, for $4^1/_2$ and $5^1/_2$ years, two patients with well-marked reflux œsophagitis in whom hernias, previously absent, have recently appeared and enlarged ; and I therefore hold that, in at least a proportion of cases of sliding hiatus hernia, incompetence of the œsophago-gastric valve or sphincter is the first cause, and reflux œsophagitis with œsophageal spasm the second cause of the herniation.

The pathognomonic symptom of reflux œsophagitis is heartburn. This symptom is common in duodenal ulcer and then indicates that there is reflux into the gullet of what are often the excessively acid gastric contents. The gastric retention which characterises active duodenal ulcer is the probable cause of this tendency to œsophageal reflux. But if reflux œsophagitis can cause hiatus hernia, as suggested, the likely reason for the occasional discovery of duodenal ulcer and hiatus hernia together is apparent.

Gastric retention has been shown sometimes to result in a gastric ulcer, and I suggest that in some cases of coincident gastric ulcer and hiatus hernia gastric retention has been the predisposing cause of both.

In my own series of hiatus hernias of the " short œsophagus " type, evidence of delay in gastric emptying has been found in 47%, including all 9 cases in which there were coincident peptic ulcers.

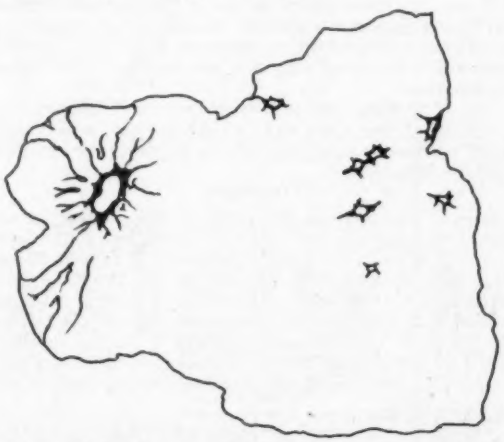

Fig. 3—Four-fifths of a stomach resected at emergency operation for massive hæmatemesis. The large chronic prepyloric ulcer had not bled but had caused pyloric obstruction by scar. The hæmorrhage came from acute gastric ulcers, several of which contained blood-clot. These were impalpable from outside the stomach. (Tracing of a photograph.)

The Prognosis in Combined Ulcers

With coexisting gastric and duodenal ulcers, the risk to the patient is greater than the sum of the risks from either ulcer alone. Hæmorrhage, specially from the gastric ulcer, is common : in all 10 patients in my series who were admitted to hospital actively bleeding, the blood came from the gastric ulcer. Of the patients with gastric ulcer alone admitted during the same period to the hospitals from which the series of concomitant ulcer is drawn, 8% had bled at some time in the past ; but among those with concomitant ulcers no less than 47% had at some time had major hæmorrhages, and 20% had had several.

In an analysis of 3000 post-war elective gastrectomies, which forms part of a separate study, the over-all mortality was found to be 4%. The death-rate among those with combined ulcers was 16%, and this was not attributable to a difference in age-distribution. In the present series of 119 cases there were 12 deaths in hospital.

Treatment

In the treatment of patients with combined gastric and duodenal ulcers it is important to bear in mind two facts :

(1) An element of gastric retention is almost certainly present, and this indicates special preoperative measures, such as gastric decompression and lavage, and particular attention to likely depletion of water, electrolyte, and protein reserves.

(2) The patient is of the duodenal-ulcer type and likely to be capable of acid hypersecretion, even though this is not always evident in the presence of pyloric obstruction. I have often advocated moderate resection for gastric ulcers in the belief that, since hypersecretion is not a feature of these patients, radical resection is unnecessary, provided that all diseased tissue is removed (Johnson 1950, Johnson and Orr 1954). For combined ulcers, however, as for duodenal ulcer, an operation adequate to control hypersecretion must be performed.

When a patient is operated upon for urgent hæmorrhage and evidence of a duodenal ulcer is seen, it should not be assumed that this is the source of the hæmorrhage, particularly if the duodenum is much scarred ; for in such a case there is a substantial chance that the bleeding is coming from a concomitant gastric ulcer, sometimes, as in 3 of my cases, an impalpable one (fig. 3).

Patients with gastric ulcers who have symptoms such as heartburn or vomiting should be suspected of gastric retention and should be especially investigated from this point of view.

The reason why sleeve resections for gastric ulcer were followed by recurrences is, I suggest, that gastric retention followed the denervation of the distal part of the stomach and the pylorus.

It is now often stated that though gastrectomies for duodenal ulcers may occasionally be followed by stomal ulcers, recurrences after resection for gastric ulcers are almost unknown. However, though I favour and have had good results with Billroth-1 gastrectomy for gastric lesions, I predict that its present widespread revival and popularity will lead to recurrent gastric ulcers due to its use in some unsuitable cases where the creation of only small and inadequate stomas has been possible.

Finally, I would urge that concomitant gastric and duodenal ulcers are too dangerous to warrant non-operative management, and that surgery should be resorted to early, before the risks become excessive.

Summary

Gastric and duodenal ulcers occur in quite different sorts of people. The question therefore arises why ulcers should sometimes be found in the stomach and the duodenum of the same patient.

The incidence of concomitance of duodenal and gastric ulcers is probably about 5% if symptomless ulcers are included. Of ulcer patients who come to hospital for

investigation about 7% have both duodenal and gastric lesions. Surgeons, however, commonly see a greater proportion of such patients, and there were 9% in a surgical series of 311 cases.

Analysis of a series of 119 cases of concomitant ulcers yielded the following facts:

1. The duodenal ulcer is the first to appear.
2. The patients have a secretion pattern which lies between that of patients with duodenal ulcer and that of patients with established pyloric stenosis. It is much less like the secretion pattern of gastric-ulcer patients.
3. A substantial majority of patients with concomitant ulcers have gastric retention and many have gross pyloric stenosis. Some 16% of patients admitted to hospital with pyloric stenosis have gastric ulcers as well.
4. At operation the commonest finding is an active gastric ulcer and a healed, scarred duodenal one.

12 additional cases are described which illustrate how gastric retention from causes other than duodenal ulcer may also be complicated by the development of gastric ulcers.

9 cases are reported of peptic ulcers associated with hiatus hernia. It is suggested that reflux œsophagitis may sometimes cause hiatus hernia (instead of vice versa) and reflux may in turn be caused by duodenal ulcer and gastric retention. Gastric retention may also apparently cause gastric ulcer, and the association of these lesions may be thus explained.

Patients with concomitant ulcer are particularly prone to have hæmorrhages, and when they do it is usually the gastric ulcer which bleeds.

Once concomitant ulcers have become established, elective surgery is four times more dangerous than in cases of solitary ulcers.

The bearing of these observations upon the treatment of patients with concomitant gastric and duodenal ulcers is discussed.

REFERENCES

Belsey, R. H. (1952) Modern Trends in Gastro-Enterology. Edited by F. Avery Jones. London; p. 156.
Bonchut and Durand (1913) *Lyon. méd.* **121**, 763.
Franklin, R. H. (1954) Personal communications.
Hurst, A. F., Stewart, M. J. (1929) Gastric and Duodenal Ulcer. London; p. 97.
Johnson, H. D. (1948) *Postgrad. med. J.* **24**, 193.
— (1950) Techniques in British Surgery. Edited by R. Maingot. London; p. 385.
— Orr, I. M. (1954) *Surg. Gynec. Obstet.* **98**, 425.
Mix, C. (1913) *Surg. Clin. Murphy.* **2**, 249.
Wilkie, D. P. D. (1926) *Brit. med. J.* ii, 469.

RADIOTHERAPY OF CUSHING'S SYNDROME

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IT is now well established that the signs and symptoms of Cushing's syndrome are caused by adrenal cortical overactivity. This may be due to an adrenal cortical tumour, but bilateral cortical hyperplasia is more commonly found, and it is widely thought that this is due to increased pituitary adrenocorticotrophic activity.

When no tumour can be found, treatment of the syndrome may be directed either at reducing the amount of cortical tissue by surgery or at diminishing the stimulus to cortical overactivity by irradiation of the pituitary gland.

Unilateral adrenalectomy does not usually influence Cushing's syndrome significantly (Sprague 1953), but bilateral subtotal adrenalectomy and total adrenalectomy, developed at the Mayo Clinic by Priestley et al. (1951) has produced excellent remission of symptoms in nearly all patients. But this operation is a considerable undertaking, even in skilled hands, and is often followed by chronic adrenal insufficiency, which requires substitution treatment with cortisone.

Further evidence is presented here that the progress of Cushing's syndrome may be arrested, and that considerable improvement may take place in suitable patients after irradiation of the pituitary gland. This treatment is simple, involves no operative risk and is not followed by chronic adrenal insufficiency. 6 patients treated in the last five years are reported, details of the treatment used are described, and the assessment of progress is discussed.

The difficulties of excluding the presence of an adrenal cortical tumour are again emphasised; but, if this can be achieved, radiotherapy should be used as the initial treatment. If this does not arrest or improve the condition, surgery may still be undertaken later with undiminished chances of success.

Material

The 6 patients (table I) were all females aged 19–36. They presented most of the features described by Cushing (1932), and additional evidence of cortical hyperfunction was obtained by estimation of the urinary excretion of corticosteroids and neutral 17-ketosteroids and by measuring glucose tolerance. Corticosteroids (formaldehydogenic) were measured by the method of Corcoran and Page (1948), the normal range for adult

TABLE I—DETAILS OF SIX CASES OF CUSHING'S SYNDROME

Case no.	Age (yr.)	History	Weight (lb.)	Striæ	Hirsuties	Polycythæmia	Amenorrhœa	Blood-pressure (mm. Hg)	Glucose tolerance	Corticosteroids (mg. in 24 hr.)	17-Ketosteroids (mg. in 24 hr.)
1	28	10 yr.	+70	+	+	+	7 mos.	180/105	Diabetic	..	39·8
2	23	3 yr.	+20	+	+	+	8 mos.	150/100	Reduced	1·90	28·0
3	36	5 yr.	+28	+	+	—	12 mos.	210/130	Diabetic	1·68	26·8
4	33	1 yr.	+7	+	+	—	11 mos.	220/150	Reduced	1·06	29·8
5	23	6 mos.	+	+	+	—	4 mos.	150/100	Normal	..	18·0
	34	2 yr.	+42	+	+	—	2 yr.	160/120	Reduced	2·5	21·6
6	19	3 yr.	+28	+	+	—	2½ yr.	170/115	Normal	1·99	12·0

women in our laboratory being 0·3–0·8 mg. in twenty-four hours. Neutral 17-ketosteroids were measured by the method recommended by the Medical Research Council (1951). The normal range for adult women is 6–18 mg. in twenty-four hours. Well-marked virilism and much-increased excretion of androgens suggesting an adrenal cortical tumour were not observed; nor was there any evidence of a tumour on clinical or radiological examination.

One of the patients had been previously treated with radiotherapy for Cushing's syndrome and, after eight years' remission, a relapse following pregnancy required further treatment.

Treatment

Deep X-ray therapy was given to the pituitary gland with a high-voltage unit (250 kV peak, half-value layer 1·75 mm. of Cu). Six circular beams of X rays at 50 cm. focal skin distance were directed at the pituitary fossa with the aid of a plaster shell through portals arranged around the hair line. A maximum dose of 4000–5000r was given in twenty-eight to thirty days, the resulting skin dose being about 3000r. Larger doses are considered inadvisable because of the possible development of late cortical atrophy.

Reducing diets were used to control obesity when necessary, but no other treatment was given.

Results

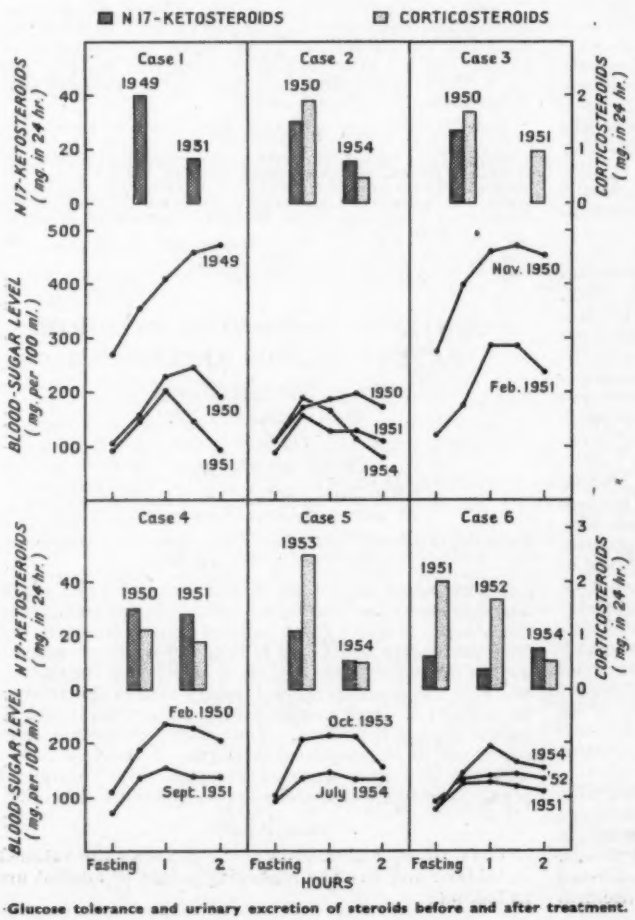
In assessing progress after treatment the following factors were studied (table II): (1) the general appearance; (2) the texture of the skin and the appearance of

TABLE II—RESULTS OF TREATMENT

Case no.	Date	Weight (lb)	Blood-pressure (mm.Hg)	Menstruation	Glucose tolerance	Corticosteroids (mg. in 24 hr.)	17-Ketosteroids (mg. in 24 hr.)	Irradiation (r)	Result
1	1949	199	180/105	Absent	Diabetic	..	39·80	5600/5400	Remission
	1954	192	120/80	Regular	Normal	.. (1951)	16·60		
2	1950	158	150/100	Absent	Reduced	1·90	30·50	5200/4700	Remission
	1954	147	120/70	Irregular	Improved	0·80	15·60		
3	Dec., 1950	..	210/130	Absent	Diabetic	1·68	26·80	4500/3700	Died of cerebral hæmorrhage
	Apr., 1951	..	165/100	Absent	Improved	0·96	..		
4	1950	124	230/150	Absent	Reduced	1·06	29·80	4100/3900	Remission
	1954	124	150/105	Regular	Improved	0·90 (1951)	28·00		
5	1943	160	150/100	Absent	Normal	..	18·00	1700/1550	Remission
	1944	171	120/85	Regular	..	..	..		
	1953	184	160/120	Absent	Reduced	2·50	21·60	3000/2875	Remission
	1954	158	140/100	Irregular	Improved	0·46	10·00		
6	1951	134	170/115	Absent	Normal	1·99	12·00	4000/3400	Not progressive
	1952	141	150/100	Regular	,,	1·64	7·37		
	1954	134	140/100	Irregular	,,	0·52	14·80		

the striæ; (3) the menstrual history; (4) urinary excretion of steroids; (5) glucose tolerance; and (6) blood-pressure.

In 4 of the 5 surviving patients there was considerable improvement. The 5th patient showed only temporary improvement, but her disease has not progressed since treatment three years ago.



Glucose tolerance and urinary excretion of steroids before and after treatment.

One patient died of a cerebral hæmorrhage five months after treatment was completed; she had had hypertension for many years and a vascular accident five years previously, but before her death there was evidence of improvement in her Cushing's syndrome. Necropsy showed mild enlargement of both adrenal cortices and hyaline changes in the pituitary basophil cells, but no adenoma was discovered.

Treatment led to slow but continued improvement, diminishing plethora, and fading of the skin striæ, usually becoming evident one to three months after the start of treatment. Polycythæmia, present in 2 patients, disappeared during this period. Hirsuties was less influenced and remains prominent in 2 patients who are otherwise normal.

Menstruation became re-established after a variable time in all the surviving patients but ceased again in case 6 and remains irregular in cases 2 and 5. Glucose-tolerance curves showed improvement in all cases where it had been abnormal. Case 1, with an originally diabetic type of curve, now shows normal glucose tolerance despite failure to observe any dietary restrictions, her weight remaining substantially unchanged. Significant improvement was observed in the remainder (table III).

The urinary excretion of corticosteroids diminished in 4 patients, but in a 5th, who is clinically well, the change was slight and excretion remained at the upper limit of normal. The urinary excretion of 17-ketosteroids which was moderately increased in 5 patients, showed significant reduction in only 2 patients.

The blood-pressure fell in all the patients, but in only 2 did it fall to normal levels. When hypertension had been present for a long time and secondary changes had taken place in the kidneys and blood-vessels, as in case 3, this outcome was to be expected.

Discussion

When a patient presents the appearance of Cushing's syndrome, it is important to establish that this is due to adrenal cortical overactivity. Obesity and hirsuties occur with hypertension and irregular menstruation in women as a constitutional abnormality. The condition is not progressive, and evidence of cortical overactivity is absent.

No single clinical feature of Cushing's syndrome can be regarded as pathognomonic or essential to the diagnosis. Although we

have found the skin changes a reliable clinical indication, we have confirmed the presence of cortical overactivity by the estimation of urinary excretion of corticosteroids. Absolute eosinophil-counts and the urinary uric-acid creatinine ratio were not used, but additional evidence was forthcoming in some patients who showed diminished glucose tolerance and increased urinary excretion of neutral 17-ketosteroids.

The presence of cortical hyperfunction having been established it is necessary to determine whether this is due to a cortical tumour. A short history with rapid development of symptoms and well-marked changes in the sexual sphere suggest that a tumour is present. Much increased urinary excretion of androgens with an increase in the β-ketosteroid fraction may provide confirmatory evidence. In men showing well-marked feminising changes tumours are almost invariably present, and excessive excretion of œstrogen was found in 1 such case by Simpson and Joll (1938).

Clinical examination rarely reveals the presence of tumours; but they may sometimes be demonstrated by plain radiograms, pyelography, or peri-renal insufflation of air. Sprague (1953) points out that the tumours causing Cushing's syndrome may be very small and impossible to demonstrate radiographically. In his cases tests of urinary excretion of steroids proved unreliable in distinguishing tumour from hyperplasia, and he therefore advocates exploratory operation as the only certain method of making the distinction. A functional adrenal cortical tumour is associated with atrophy of the opposite adrenal gland, either of these situations being readily recognised at operation by an experienced surgeon.

On the other hand, patients with long and slowly progressive histories, prominent metabolic disturbances, and little evidence of virilism are more likely to have adrenal cortical hyperplasia. In these patients the excretion of corticosteroids is always considerably increased, but the excretion of 17-ketosteroids is only slightly increased and may be within normal limits. Surgical exploration in these cases reveals either normal-sized or enlarged glands on both sides.

The prognosis in Cushing's syndrome is poor, about half the patients dying within five years of the establishment of the diagnosis (Plotz et al. 1952, Sprague 1953). Intercurrent infection, the effects of hypertension, osteoporosis, and psychological changes contribute largely to the morbidity of Cushing's syndrome. In the remainder spontaneous variations in the activity of the syndrome are common; deterioration is slower and punctuated by remissions, the final prognosis depending on cardiovascular and renal changes resulting from the hypertension characteristic of the syndrome.

The value of treatment is difficult to assess because of these spontaneous variations in activity and because numerous different forms of treatment have often been used in published cases. It is important that progress should be adequately followed and objective evidence of improvement obtained before good results are claimed from a particular form of treatment. Until recently the treatment leading to remissions in the highest proportion of cases has been irradiation of the pituitary gland. Widely different techniques of treatment and dosage have been used, with variable results in different clinics, and Sosman (1949) found that only 38% of all patients treated in this way had improved. Of his own 6 cases, however, 4 showed considerable improvement after radiotherapy.

The serious prognosis, high morbidity, and unreliable results of previous forms of treatment in Cushing's syndrome encouraged Priestley et al. (1951) to attack the condition at the adrenal level by surgical means. At operation the presence or the absence of an adrenal cortical tumour can also be most satisfactorily decided. When neither tumour nor atrophy (indicating a tumour of the opposite adrenal gland) is found, these workers recommend removal of nine-tenths of one adrenal gland and complete excision of the opposite one.

This treatment is quite logical and strictly analogous to the treatment of hyperthyroidism by subtotal thyroidectomy. Although there have been a few relapses, 47 of their 48 surviving patients are in remission. The likelihood of chronic adrenal insufficiency after the operation is great, and its potential dangers are much more serious than those of myxœdema after thyroidectomy. Half these patients are receiving substitution treatment with cortisone (Sprague 1953).

Substantial improvement has resulted in 4 of the 6 patients treated by the method described here. It is considered that controlled Cushing's syndrome is a preferable existence to controlled adrenal insufficiency, and that radiotherapy should be used before surgery is contemplated. If this fails to arrest the progress of Cushing's syndrome within six to twelve months, surgical treatment can then be used with undiminished chances of success.

Summary

6 cases of Cushing's syndrome treated by pituitary irradiation are reported.

Considerable objective improvement resulted in 4 of the 6 cases.

Pituitary irradiation is preferable to surgery as the initial treatment of Cushing's syndrome due to adrenal cortical hyperplasia.

I wish to thank Dr. H. Gardiner-Hill, under whose care these patients were admitted to hospital, and Dr. W. J. Griffiths, who undertook the biochemical investigations, for permission to publish and for much helpful criticism and advice; and Dr. I. Churchill-Davidson for details of the technique used in irradiating the pituitary gland.

REFERENCES

Corcoran, A. C., Page, I. H. (1948) *J. Lab. clin. Med.* **33**, 1326.
Cushing, H. (1932) *Bull. Johns Hopk. Hosp.* **50**, 137.
Medical Research Council (1951) *Lancet*, ii, 585.
Plotz, C. M., Knowlton, A. I., Ragan, C. (1952) *Amer. J. Med.* **13**, 597.
Priestley, J. T., Sprague, R. G., Walters, W., Salassa, R. M. (1951) *Ann. Surg.* **134**, 464.
Simpson, S. L., Joll, C. A. (1938) *Endocrinology*, **22**, 595.
Sosman, M. C. (1949) *Amer. J. Roentgenol.* **62**, 1.
Sprague, R. G. (1953) *Proc. R. Soc. Med.* **46**, 1070.

CONTINUOUS MURMURS WITHOUT PATENT DUCTUS ARTERIOSUS

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SEVEN cases of patent ductus arteriosus in which atypical murmurs were heard and the usual continuous machinery murmur was absent were reported by Bonham Carter and Lovel (1953). As a direct contrast to this we report here five cases in which a continuous murmur was heard in the pulmonary area in the absence of any of the usual causes of such a murmur, including patent ductus arteriosus. Four of these children were subjected to thoracotomy, and two of these (together with the fifth case) came to necropsy. The presence of a patent ductus was thereby definitely excluded in all.

Case-reports

The main clinical features of the five cases are outlined in tables I and II. The remaining points of interest are as follows:

TABLE I—CLINICAL FEATURES

Case no.	1	2	3	4	5
Pregnancy and labour	Normal	Normal	Normal	Normal	Normal
Birth-weight	6 lb. 12 oz.	8 lb. 6 oz.	9 lb. 12 oz.	6 lb.	6 lb.
Age when murmur was detected (mos.)	9	10	6	3	24
Anorexia	Present	Present	None	Variable	Present during infancy
Underweight	Yes	Yes	No	Yes	Yes
Mile-stones	Normal	Normal	Normal	Normal	Delayed
Cyanosis	None	Present	? Present	Present	? Present
Effort tolerance	Fair	Poor	Poor	Poor	Poor
Respiratory illnesses	Present	Present	Present	Present	Present
Thrills :					
Apical	Systolic	(Systolic and diastolic	Masked by		Systolic
Pulmonary	Systolic and diastolic	at left sternal edge)	chest sounds	Systolic	Systolic and diastolic
Aortic	Systolic	Systolic			Systolic
Murmurs					
Apical	None	Diastolic	Systolic	Diastolic	Systolic
Pulmonary	Continuous	Continuous pulmonary and systolic at left sternal edge	Continuous	Continuous	Continuous
Aortic	Systolic and diastolic	None	None	None	Systolic and diastolic
Electrocardiogram	Left ventricular hypertrophy ? Right ventricular hypertrophy Right bundle-branch block	Left ventricular hypertrophy Right ventricular hypertrophy Right bundle-branch block	Left ventricular hypertrophy Right ventricular hypertrophy Changes in P and T waves	Right ventricular hypertrophy Right bundle-branch block	Left ventricular hypertrophy and strain
Cardiac-catheterisation findings	Ventricular septal defect Right hypertension			Suggested patent ductus	Suggested patent ductus
Congestive heart-failure	±	Present	Absent	Absent	Absent

Case 1.—A girl born on March 24, 1948, in whom a murmur was detected at the age of 9 months, was referred to the congenital-heart clinic about a year later. She contracted whooping-cough at the age of 1 year and pneumonia at the age of 2 years, and had several attacks of bronchitis. There was no relevant family history. She was admitted with clinical and radiological signs of collapsed right lower lobe.

Cardiac investigations after her recovery from this condition suggested the presence of a patent ductus arteriosus and aortic stenosis with incompetence. Cardiac catheterisation

TABLE II—SALIENT FEATURES OF PATENT DUCTUS

Case no.	1	2	3	4	5
Collapsing pulse	0	+	+	0	+
High pulse-pressure	+	+	+	0	+
Continuous murmur	+	+	+	+	+
Cardiac enlargement :	+ +	+ +	+ +	+ +	+ +
Left ventricle	+ +	+	+	+	+ +
Right ventricle	+	+	+	+	+
Pulmonary plethora	+	+	±	+	0
Pulmonary second sound	+	+	Normal	+	+
Electrocardiogram showing left ventricular hypertrophy	+	+	+	0	+

proved the presence of a ventricular septal defect with a right ventricular pressure of 58 mm. Hg.

Operation.—A patent ductus arteriosus being suspected, an exploratory thoracotomy was done, but the child died during the operation.

Necropsy findings (table III) included ventricular septal defect, endocardial fibro-elastosis, aortic stenosis and incompetence, mitral stenosis, and congestive cardiac failure. Associated with the last of these were pulmonary œdema, congestion, and collapse and cerebral œdema. General lymphoid hyperplasia, hydromyelia of the cervical cord, and mild infection of the upper respiratory tract were also found.

Case 2.—A girl born on Dec. 27, 1951. There was no relevant family history. A murmur was heard during examination because of gastro-enteritis at the age of 10 months. She was not seen at Great Ormond Street till March 13, 1954, when she was referred to the congenital-heart clinic. At this age (27 months) she could not walk and was having most of her food by bottle. There was nocturnal dyspnœa ; she was constipated and losing weight. She was admitted in congestive failure and was given digoxin and sedatives. She responded slowly, and later investigation suggested the presence of a patent ductus arteriosus and possibly aortic stenosis.

Operation.—At thoracotomy a coarse thrill was found in both the pulmonary artery and the aorta, but the ductus was sclerosed. Left auricular biopsy proved the presence of endocardial fibro-elastosis, and lingular biopsy showed pulmonary hypertensive vascular changes. This hypertension was also proved by the intracardiac pressures recorded at operation : right auricle 15/10 mm. Hg, right ventricle 74/16 mm. Hg, pulmonary artery 81/58 mm. Hg, left ventricle 108/22 mm. Hg, and aorta 108/52 mm. Hg.

Postoperatively the patient's condition became critical. Congestive failure increased despite digoxin, morphine, oxygen, and mercurial diuretics, and she died on the eighth post-operative day.

Necropsy revealed a large ventricular septal defect, widespread endocardial fibro-elastosis involving the mitral valve, dilatation and hypertrophy of all the heart chambers, probe patency of the foramen ovale, and postoperative fibrinous pericarditis. There was also visceral evidence of congestive cardiac failure and hydromyelia of the lumbar cord.

Case 3.—A boy born on March 4, 1952. There was no relevant family history. Symptoms of breathlessness, wheeziness, and difficulty in feeding had been present from birth, and he was admitted to Great Ormond Street, at the age of

TABLE III—PATHOLOGICAL AND CLINICAL FINDINGS

Case no.	Ventricular septal defect	Aortic valve	Mitral valve	Pulmonary valve	Congestive cardiac failure	Endocardial fibro-elastosis	Miscellaneous
1	+	Stenosis, incompetence	Stenosis	..	+	+	Fenestration of pulmonary cusps
2	+	Opaque	Dilated ? Incompetence, cusp nodules	Dilated, ? incompetence	+	+	Slight dextropositioning of aorta
3	–	Stenosis	Thickened cusps	..	+	+	Coarctation with large collaterals
4	+	..	..	Incompetence, ? stenosis	–	–	Pulmonary hypertension
5	+	Incompetence, ? stenosis	..	..	–	–	Pericardial defect

6 months. A continuous murmur was heard by several observers and, in addition to other signs suggesting a patent ductus, his femoral pulses were absent and blood-pressure was unrecordable in his legs. He had severe bronchospasm, which responded well to ephedrine. He was allowed home but returned a month later in extremis. On his second admission there was clinical and radiological evidence of consolidation and collapse of the right upper lobe and severe bronchospasm. He was given digoxin, oxygen, penicillin, and sedatives and, later because of his poor response, intravenous procainamide. He still did not improve and, though intravenous aminophylline was also tried, he died about twenty-four hours after admission. The clinical diagnosis was coarctation of the aorta, patent ductus arteriosus, and cardiac failure precipitated by severe respiratory infection and bronchospasm.

Necropsy confirmed the coarctation, congestive failure, and respiratory infection. There was no patency of the ductus, but endocardial fibro-elastosis of the left atrium with thickening of the mitral and aortic valves was found. There were also some intimal and elastic-tissue changes in the coronary arteries and a very large collateral internal mammary artery.

Case 4.—A boy born on Feb. 5, 1947. There was no relevant family history. He was seen at Great Ormond Street about the age of 3 months because of frequent respiratory illnesses and was referred to the congenital-heart clinic for cardiovascular investigation. His cardiac enlargement was associated with considerable chest deformity, and he had, on most examinations, moist sounds in his chest. He had no other evidence of congestive cardiac failure. Cardiac catheterisation showed a higher oxygen saturation in the pulmonary artery than in the right ventricle and pulmonary hypertension (pulmonary artery 60/32 mm. Hg). These suggested a patent ductus.

Operation.—At thoracotomy right ventricular hypertrophy and a dilated pulmonary artery only were found. Lingular biopsy showed hypertensive changes in the pulmonary vessels, and organising pneumonitis (probably viral in origin) was observed. This latter finding adequately explained the persistent moist sounds in the chest.

Follow-up.—When seen in August, 1954, the boy was fairly active, still had a trace of cyanosis, and still showed clinical and radiological evidence of collapse at his left base. It was thought that the collapse might have been due in part to infection and in part to the gross cardiac enlargement. He was readmitted in August, 1954, with a further respiratory infection, which responded well to antibiotics.

Case 5.—A girl born on Dec. 22, 1942. There was no relevant family history. Breathlessness on exertion without cyanosis had been observed since birth, and she contracted chickenpox, whooping-cough, and numerous attacks of bronchitis. At the age of 2 years, during an attack of bronchitis, a cardiac murmur was heard, but she was not seen in the congenital-heart clinic until the age of 8 years. Although the pulmonary vasculature appeared normal on screening, there was a large pulmonary-artery outline, and the other evidence suggesting a patent ductus was convincing (see table II). Finger plethysmograph and femoral-artery tracings were inconclusive, but cardiac catheterisation revealed a high oxygen saturation in the pulmonary artery.

Operation.—At thoracotomy no ductus was found. The left auricular appendage and pulmonary artery were seen to bulge through a defect in the pericardium (explaining the findings on radioscopy). Since discharge she has been having slight precordial pain suggesting angina but is otherwise very well. The diagnosis was thus revised to a high ventricular septal defect, aortic stenosis and incompetence, and a pericardial defect.

Discussion

There are at least six well-recognised causes of a continuous murmur heard over the precordium. The best-known is the Gibson or machinery murmur of a patent ductus arteriosus, which is loudest in the second or third intercostal space—over, or just lateral to, the pulmonary area. Although the classical murmur sounds continuous on auscultation, the phonocardiographic tracing of the sound (fig. 1) often begins in mid or late systole, rises to a crescendo at the second sound, and diminishes thereafter to end usually about mid-diastole. The second sound is usually distinguishable in the midst

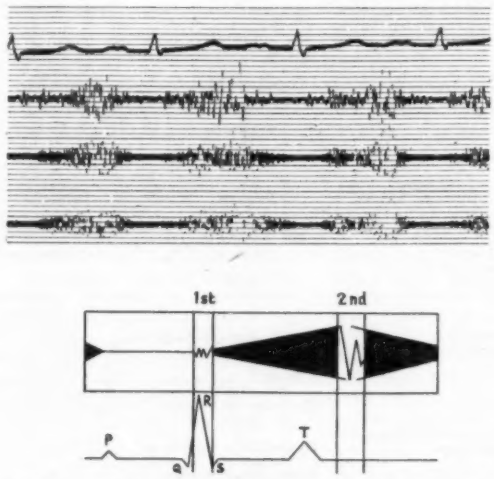

Fig. 1—Phonocardiogram of typical murmur in a case of patent ductus arteriosus: second left intercostal space.

of this murmur both by auscultation and by phonocardiography.

The continuous hum of venous origin is not often mistaken for a ductus murmur, because it is usually softer, and though more commonly right-sided, can be heard up towards one or both clavicles and above them. It cannot be heard posteriorly, and it is unique in that it can be made to alter or to disappear by turning the head or by digital pressure on the veins in the neck.

In cases of pulmonary atresia or persistent truncus arteriosus the lungs may derive their blood-supply from the aorta. The anastomosis thus formed between the bronchial and the pulmonary vessels produces a continuous murmur. This may be heard over any part of the chest. Its point of maximal intensity is difficult to locate but is not uncommonly posterior or in the axillæ. It is usually a soft sound, uninfluenced by positioning or by venous pressure.

Much less often the continuous murmur may be heard over an arteriovenous aneurysm. In children this anomaly is invariably congenital and may be multiple. The murmur may be heard in the axilla (Luisada 1948) or over the aneurysm. Equally unusual is the congenital

Fig. 2—Outline of phonocardiogram in case I: second left intercostal space.

aortopulmonary communication, in which the bruit is audible over the base.

The last two possibilities are even more rare: (1) perforation of a sinus of Valsalva (aortic sinus) into the pulmonary artery or into the right ventricle is included by Wood (1950) as a cause of a continuous murmur; and (2) Taussig (1947) has heard such a murmur in one case of congenital pulmonary stenosis and incompetence with associated anomalies of the aortic valves.

To this list must now be added the present five cases. Clinically these cases presented features which so strongly suggested patent ductus that thoracotomy was done on four children, and a fifth died suddenly before he could be operated on. Table II shows how closely the findings in these cases resembled those of a case of

patent ductus, and in case 4 alone were there any reasonable grounds for doubt: in this instance the pulse and pulse-pressure were normal, and there was no electrocardiographic evidence of left ventricular hypertrophy. A normal electrocardiogram is commonly found in cases of patent ductus, particularly in younger children. In case 4, however, it is rather surprising in view of the marked cardiac enlargement.

In view of this difficulty in diagnosis, to resolve which exploratory thoracotomy was undertaken, an explanation for these continuous murmurs should be sought. In case 1 a basal systolic and early diastolic murmur would be produced by the aortic stenosis and incompetence, which were originally diagnosed. In the phonocardiogram the rhomboid systolic outline of such a valvular stenosis usually ends about 0·04 sec. before the second sound, and no continuity is present (Reinhold and Nadas 1954). The systolic murmur of a ventricular septal defect (also present in case 1) continues up to the second sound in most cases. It is conceivable that the superimposition of these sounds, together with those produced by fenestration of the pulmonary-valve cusps, would produce a sound indistinguishable from the continuous ductus murmur on auscultation. The phonocardiographic outline of such a combined sound might, however, differ slightly from that of the ductus, and in fact did so in case 1, there being a decrease of intensity of the murmur just before the second heart sound. The difference between the typical patent-ductus murmur and the outline obtained in case 1 can be appreciated on comparing

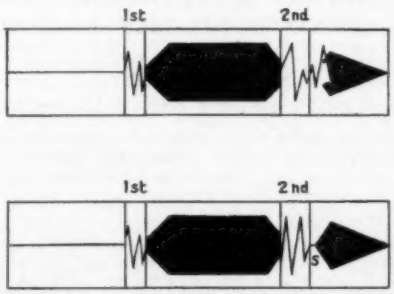

Fig. 3—Basal diastolic murmurs: above, silent period lost owing to lateness of second component of second sound; below, S indicates silent period.

figs. 1 and 2. This atypical outline has been observed in a few cases of patent ductus by Reinhold and Nadas (1954), but such an atypical tracing in cases with unusual clinical features might be of some diagnostic value.

Case 2 is less easy to explain. Endocardial fibro-elastic thickening, in the absence of damage to the valves, produces no murmurs. The ventricular septal defect could be responsible for a long basal systolic murmur and a mid-diastolic or even presystolic murmur at the apex, but these could not produce a basal continuous sound. The other possibility is that the septal defect with pulmonary hypertension had enlarged the pulmonary artery to the extent of producing an incompetence murmur in that area. Dilatation of the valve ring was found post mortem. The trouble with this suggestion, however, is that, although murmurs due to incompetence heard at the base are often early, there may be a short silent period after the second sound. Wells et al. (1949a) found that three-quarters of the basal diastolic murmurs had a crescendo-diminuendo configuration (fig. 3), but that a pure diminuendo pattern is sometimes seen when the second component of the second sound is delayed. Whether the fact that most of the cases reported by Wells et al. (1949a and b) were rheumatic in origin and not congenital is important or not it is impossible to say; but, if the diastolic element in case 2 was due to pulmonary

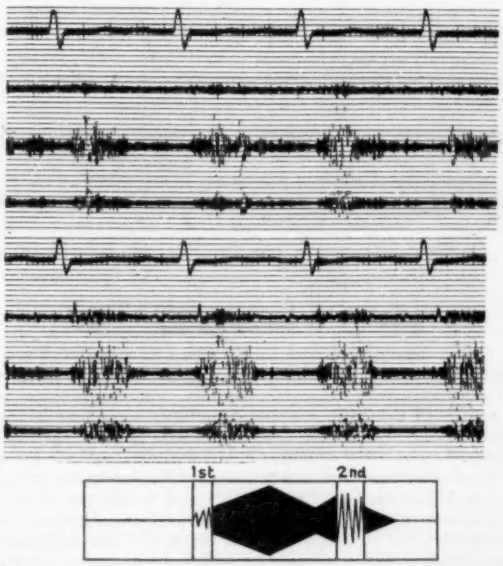

Fig. 4—Phonocardiogram in case 2: upper tracings, second left intercostal space; lower tracings, second right intercostal space.

insufficiency, this case would have to be one of the 25% with pure diminuendo diastolic patterns (fig. 3). The phonocardiogram of case 2 (fig. 4) shows a rhomboid systolic configuration. Although such a pattern is usually seen in valvular stenosis (see case 1) it has rarely been observed in cases of ventricular septal defect. The continuous tracing is more obvious in the aortic area (see also case 5).

Case 3 is as difficult to explain. The murmurs of aortic stenosis and coarctation could not produce a continuous sound over the base. Precordial diastolic murmurs are sometimes heard in cases of coarctation of the aorta, but they resemble aortic-insufficiency murmurs (Wells et al. 1949b). These workers report the following interesting finding in six out of fifteen cases of coarctation: "The diastolic vibrations were characteristically of decrescendo configuration, being a continuation from the systolic murmur." This finding, however, was only observed when listening and taking tracings over the spine. Mitral stenosis found post mortem in case 3 again raises the question of pulmonary incompetence as

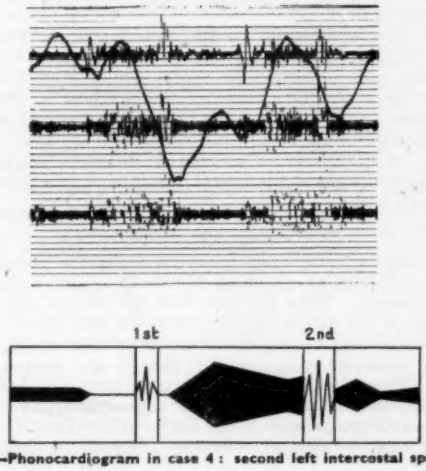

Fig. 5—Phonocardiogram in case 4: second left intercostal space.

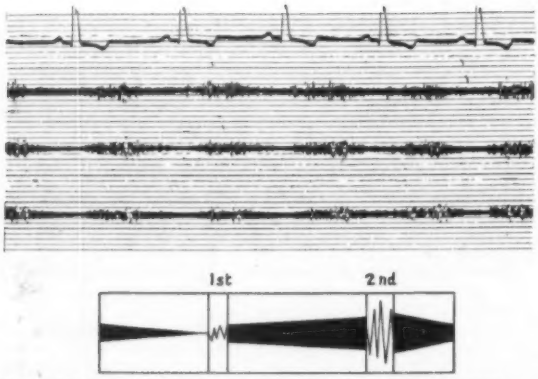

Fig. 6—Phonocardiogram in case 5: second left intercostal space.

a source of diastolic sounds, but much the most important alternative cause was a greatly dilated collateral internal mammary artery. A continuous murmur is not infrequently heard on auscultation of the lactating breast, and it is known that the blood-flow through the internal mammary artery is greatly increased at such times. Unfortunately no phonocardiogram could be taken from this child, because of the severe and persistent accompaniments in his chest.

To explain the murmur in case 4 one must again assume that pulmonary incompetence produced an early diastolic murmur, and in this instance there is the suggestion of a short silent period (fig. 5). The ventricular septal defect was proved by cardiac catheterisation and was doubtless responsible for the systolic element of the continuous murmur. The complete outline (fig. 5) was again atypical, showing much the same systolic outline as in cases 1 and 2.

Case 5 closely resembles the first from the point of view of the phonocardiogram taken over the pulmonary area. Fig. 6 shows the aortic-area tracing, which is quite typical of that of a patent-ductus murmur. Perhaps more importance should have been attached to this rather unusual finding. Although the ductus murmur can often be heard to the right of the sternum, it is loudest (except in dextrocardia and cases of right aortic arch) to the left of the midline. The finding of a high oxygen saturation in a high right ventricular sample on catheterisation might avoid the wrong diagnosis made in case 5. Although this finding would support the diagnosis of a ventricular septal defect it has been found in cases of patent ductus in which there is pulmonary regurgitation.

The lesions detected clinically and post mortem are outlined in table III. All the cases have multiple abnormalities, but a ventricular septal defect is common to all except one. The cause of the murmur in this one exception might be the large internal mammary artery. One is therefore probably justified in adding two further causes of continuous murmurs to those listed above: complicated ventricular septal defect, and large tortuous collateral vessels.

Conclusion and Summary

An attempt has been made to explain a continuous murmur heard at the base in five cases of congenital heart-disease. None of these had the lesions which are recognised as causing such murmurs, and there is no way of further proving the accuracy of the explanations given. It can be said, however, that in any case showing the features of a patent ductus arteriosus, and in which multiple lesions are suspected, a careful study of the phonocardiogram may be of some help. In such cases two further causes of continuous murmurs should be born in mind: complicated ventricular septal defect, and large tortuous collateral vessels.

Intravenous angiocardiography does not always provide an answer and has its risks. The greater risks of retrograde aortography make it hardly justified at present. It is therefore likely that, in such difficult and complicated cases as these, exploratory thoracotomy will sometimes be done no matter how carefully the cases are investigated. Although the death-rate is high in this small series, it is considered that thoracotomy nowadays has a relatively low risk, and that no ailing child of this type should be allowed to die without making sure that the abnormality is not one which can be corrected surgically.

We wish to thank Dr. J. D. L. Reinhold for his valuable advice about the phonocardiography; Mr. D. J. Waterston for the operations; Dr. Martin Bodian and staff for the necropsy and biopsy reports; Mr. G. H. Bryant and Miss J. Robert for their technical assistance; and Mr. D. S. Martin for the photographs.

REFERENCES

Bonham Carter, R. E., Lovel, K. (1953) *Great Ormond St. J.* **6**, 93.
Luisada, A. A. (1948) Heart. Baltimore and London; p. 490.
Reinhold, J. D. L., Nadas, A. S. (1954) *Amer. Heart J.* **47**, 405.
Taussig, H. B. (1947) Congenital Malformations of the Heart. New York and London; p. 19.
Wells, B. G., Rappaport, M. B., Sprague, H. B. (1949a) *Amer. Heart J.* **37**, 586.
— — — (1949b) *Ibid*, **38**, 69.
Wood, P. (1950) Diseases of the Heart and Circulation. London; p. 229.

HUMAN INFECTION WITH PLEUROPNEUMONIA-LIKE ORGANISMS

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ALTHOUGH pleuropneumonia-like organisms (P.P.L.O.) are well-recognised animal pathogens, there is no convincing evidence that strains isolated from man cause human disease (Nicol and Edward 1953). The lack of an animal susceptible to human strains makes proof of pathogenicity by the application of Koch's postulates impossible, but from the evidence set out below it seems clear that, given suitable conditions, at least some of these organisms can cause severe illness.

Methods

Methods of isolation described by Edward (1950) were adapted for routine use.

Media

Since a suitable medium may be required infrequently and at short notice, it is important to use one which is already in use for some other purpose and is likely to be available in a fresh condition. Human genital strains will grow on defibrinated horse-blood (10%) nutrient agar after three or four days' incubation at 37°C, provided that the medium is fresh and remains moist. Pathogenic strains so far found are aerobes but grow equally well anaerobically. In routine cultures growth is often better on the anaerobic plate because the atmosphere in the jar is moist. Aerobic plate-cultures should either be incubated in small tins with an open tube containing water or sealed to prevent evaporation.

Nagler's medium used for the rapid identification of *Clostridium welchii* (Hayward 1941) supports the growth of these microbes better than does blood-agar. It can be improved for their isolation, without impairing its usefulness for other purposes, by reducing the concentration of agar so that the medium is only just sufficiently solid for handling in a petri dish. When P.P.L.O. are sought, the medium should be flooded with penicillin solution 10,000 units per ml. or erythromycin solution 100 μg. per ml., and the excess fluid removed,

immediately before inoculation. If thallium acetate 1 : 8000 final dilution is incorporated in the medium, the organisms can be isolated from discharges contaminated with organisms resistant to penicillin and erythromycin ; but the medium is then unsuitable for any other purpose.

If swabs are allowed to dry before cultures are made, it is extremely unlikely that P.P.L.O. will survive. The placing of swabs in the medium, as described by Moffett et al. (1948) for the transport of gonococci, has proved highly successful. One strain survived on a swab in this medium for four days at room-temperature.

The 'Liquoid'-broth method of von Haebler and Miles (1938) is suitable for the isolation of P.P.L.O. from the blood. The blood-broth cultures should be subcultured on both blood-agar and Nagler's medium with a low concentration of agar.*

Examination for Growth

Colonies on blood-agar and on Nagler's medium after three days' incubation are very small, only just visible when viewed through a hand lens in reflected light ; further incubation does not increase their size. They are translucent and tend to embed themselves in the medium, leaving minute pits when they are scraped off. This group of microbes and their differentiation from the L-forms of bacteria have been fully described by Edward (1954). The main difference between them and other slowly growing bacteria is their morphology. If the colonies are scraped from solid medium and gram-stained in the usual way, no recognisable structures will be seen. It is essential to examine them in an impression preparation so that the colonies are not destroyed.

To make an impression preparation, first sterilise a clean coverslip by flaming it. When it is cool, press it gently on the surface of the medium over the suspected colonies and leave it for a few seconds. Then lift it carefully off the medium with forceps, without sliding it on the surface, so that the colonies are not distorted. Flame it again lightly to fix the preparation, and place it, colonies uppermost, on a glass slide. Seal it to the slide with paraffin wax for convenient handling and stain by Gram's method.

The colonies are gram-negative and have a sponge-like appearance with minute bacilliform and coccoid bodies at the periphery. They are quite unlike other bacterial colonies examined in the same way. Giemsa and Leishman stains show their structure rather better than Gram's stain does.

These microbes are not easily recognisable in liquid cultures either in stained preparations, under dark-ground illumination, or by phase-contrast microscopy. In a medium containing cells it is difficult to distinguish them from the products of cell degeneration. In smears of infected discharges they are unrecognisable. Experience in handling them can be gained by culturing cervical and vaginal swabs from patients attending venereal-disease clinics. About 70–80% positive results can be expected (Nicol and Edward 1953).

Antigenic Analysis

Unsuccessful attempts were made to prepare agglutinating antigen by centrifuging liquid cultures and by scraping the growth from the surface of solid medium. Satisfactory suspensions were sometimes obtained but could not be relied on. Serological tests were therefore made by complement fixation only, using Belyavin's (1953) modification of Fulton and Dumbell's micro-technique. It was found that a "chess-board" titration, described by Belyavin for influenza-virus complement fixation, was not required, because the highest concentration of antigen was always the most active. No prozones were seen.

Antigens were prepared by centrifuging 4–5 day human plasma (10%) broth cultures at 3000 r.p.m. for at least one hour and resuspending the deposit from 100 ml. in 4 ml. of saline solution. Drops of the supernatant fluid seeded on Nagler's medium yielded a semiconfluent growth, and it was found that the activity of the antigen could be increased about fourfold by more efficient centrifugation at 14,000 r.p.m. for 30 minutes. Killing the organism by heat at 56°C rendered the suspension anticomplementary ; the antigen used, therefore, was an untreated living saline suspension.

Antigens for injection into rabbits for the preparation of specific antisera were also concentrated living suspensions similarly prepared, but the strains were cultured in 10% rabbit-serum broth. Material for the final injection was centrifuged at high speed (14,000 r.p.m. for 30 minutes). Rabbits were injected intravenously on days 1, 2, 4, 5, 8, and 9. They received on each occasion the deposit from 90 ml. of fresh 4–5 day culture. A titre of complement-fixing antibody of about 2880 could be expected on the 14th day. It began to fall 14 days later—i.e., a month after the first injection. The rabbits showed no sign of illness.

COMPLEMENT-FIXING ANTIBODY TITRES IN HUMAN SERA (EXPRESSED AS FINAL DILUTION OF SERUM)

Case no.	Homologous antigen	Time after onset of symptoms				
		0–10 days	From 14 days to 1 month	1–2 mos.	2–3 mos.	6 mos.
1	1345/51	..	..	12	6	< 3
2	8097/53	< 3	480	120	12	3
3	17892/53	< 3	240	240	..	24
4	21731/53	< 3	48	24	..	< 3

Clinical Records

Case 1.—A woman, aged 43, was delivered of her first child on Jan. 13, 1951. The delivery was difficult and performed with forceps. On the second day of the puerperium, while receiving sulphonamide, she developed pyrexia (103°F). Soluble penicillin 1 mega-unit, followed by procaine penicillin 300,000 units twice daily, had no effect on the temperature, which continued to swing between 99° and 103°F during two days' treatment, which was then discontinued.

Investigations made on the fifth day after delivery gave the following results. Blood-cultures (in air, in air plus 5–10% carbon dioxide, and anaerobic) yielded a pure growth of P.P.L.O. on the tenth day of incubation. Microscopy of the urine showed 8 pus cells per $^1/_6$ inch field ; a culture (blood-agar aerobic 1 day at 37°C) was sterile. A high vaginal swab contained degenerate pus cells, gram-negative bacilli, and gram-positive cocci, and on culture (blood-agar 2 days at 37°C) yielded a fairly heavy growth of *Escherichia coli* and anaerobic fusiform bacilli. A white-cell count showed 13,000 per c.mm. (polymorphs 68%).

Treatment.—On the sixth day, although the blood-culture result was not yet known, the patient was given aureomycin. Her temperature immediately began to fall and was normal by the end of the eighth day. She was discharged fit on the twenty-sixth day after an investigation for renal disease which proved negative. Samples of serum were collected to be examined for antibodies against the organism isolated from her blood (see table).

The titres recorded from case 1 are low in relation to the severity of her illness ; but this is not surprising, because, when they were estimated, experience had not been gained in the preparation of antigens and, in the light of later work, probably only a high-titre serum would have reacted at all with the crude antigen then used. Unfortunately, when a satisfactory antigen became available, the sera were unsuitable for further tests.

Case 2.—A girl, aged 15, with bronchiectasis was admitted in April, 1953, for removal of the basal segments of the lower lobe of her right lung. Treatment with penicillin 250,000 units six-hourly was started the day before operation. The day after operation the patient developed a small broncho-

* Details of these methods are also to be found in my *Clinical Bacteriology*. London, 1955.

pleural fistula, which was closed on the evening of the same day, penicillin being introduced into the wound. On the sixth day her general condition was improving. Her temperature had ranged between 100° and 101°F since the operation. On the seventh day a drainage tube was removed from the wound, and six hours later the patient had a rigor, and her temperature rose to 103°F and remained high and swinging for five days.

Investigations.—A blood-count showed 14,000 white cells per c.mm. (polymorphs 80%) and radiographs of the chest revealed fluid in the right pleural cavity. Blood-cultures in air, in air plus 5–10% carbon dioxide, and anaerobic were sterile during three weeks' incubation. A swab taken from the wound shortly after the rigor yielded a pure growth of P.P.L.O. Fluid aspirated from the pleural cavity five days later also yielded a pure growth of this organism, which was resistant to penicillin and sensitive to aureomycin.

Aureomycin treatment was followed by clinical improvement, and the temperature fell to 100°F three days later. Fluid aspirated from the chest after five days' aureomycin treatment showed numerous pus cells, but the cultures were sterile. On the following day a rib was resected to drain the empyema, after which the child made an uninterrupted recovery and was discharged healed nine weeks after the original operation. The results of tests for P.P.L.O. antibodies on several samples of serum are seen in the table.

Case 3.—A married woman, aged 31, undergoing investigation for sterility was admitted on Sept. 3, 1953, acutely ill with abdominal pain and fever. She had a long history of abdominal sepsis. At the age of 16 she had been in hospital for three months after appendicectomy. In 1946 she was operated on for bilateral tubo-ovarian abscesses. The investigation for sterility had revealed a right hydrosalpinx, and twelve days before admission her fallopian tubes had been radiographed.

On admission her temperature was 103°F, and investigations gave the following results. A high vaginal swab contained numerous pus cells and mixed organisms, and on culture (blood-agar 2 days at 37°C) yielded a heavy growth of anaerobic streptococci. A white-cell count showed 14,700 per c.mm. (polymorphs 77·5%). No abnormality was found in the urine.

Treatment with penicillin and sulphonamide for two days produced no effect. On the third day a second swab was cultured and streptomycin was given. A high vaginal swab contained numerous pus cells but no microbes, and on culture (blood-agar aerobic and anaerobic 3 days at 37°C) yielded a heavy growth of P.P.L.O. and a scanty growth of *Esch. coli*. On the fourth day treatment was changed to aureomycin, after which the temperature never rose above 101°F and the patient's general condition improved. On the eighth day a large right tubal abscess was aspirated per vaginam. No microbes were seen in the smear of the pus, and cultures yielded a heavy growth of P.P.L.O. and a few colonies of *Esch. coli*. Colpotomy was done on the ninth day and was followed by an uneventful recovery. Results of serological tests are shown in the table.

Case 4.—A married woman, aged 24, was delivered of her second child on Nov. 24, 1953, at home. She was rescued from a severe postpartum hæmorrhage by the "flying-squad" and was admitted to the hospital the same night. No antibiotics were given. Three days later the patient was well, apart from slight persistent pyrexia (99°–100°F).

Investigations gave the following results. A high vaginal swab contained moderate numbers of pus cells but no microbes, and on culture (blood-agar aerobic and anaerobic 3 days at 37°C) yielded a pure growth of P.P.L.O. No abnormality was found in the urine. The fever subsided on the eleventh day of the puerperium without antibiotic treatment. A second high vaginal swab, taken fifteen days after delivery, showed fairly numerous epithelial cells and a few pus cells, and on culture yielded a scanty mixed growth. No P.P.L.O. were isolated. The results of serological tests are shown in the table.

Controls

Of 172 sera tested 171 were negative—i.e., they gave titres less than 3. They comprised the following:

107 sera sent for Wassermann reaction and found negative.

34 from patients with acute respiratory infections (sera taken between tenth and thirty-fourth days after onset and sent for examination for virus antibodies).

1 primary atypical pneumonia, second week; cold agglutinin and streptococcus M.G. agglutinin positive.

19 from women six weeks after childbirth.

5 from pregnant women.

1 gonococcal arthritis (gonococcal complement-fixation test positive).

1 arthritis (gonococcal-complement fixation test negative).

2 Bartholin's abscess with less than a week's history.

1 abdominal abscess with 2 week's history.

One serum from a patient with a six days' history of Bartholin's abscess and a positive gonococcal complement-fixation test (titre 24) gave a P.P.L.O. titre of 12. The abscess opened spontaneously, and the pus was not cultured. The patient had had a similar abscess opened three months previously, and the pus showed no microbes in the smear and on culture yielded no significant growth; unfortunately one of the plates was contaminated. Selective medium for P.P.L.O. was not used. This patient is still under investigation.

Positive reactions with the sera of presumably uninfected patients, which were observed by Beveridge et al. (1946) in their serological investigation of non-specific urethritis, were not seen in the present investigation. Their complement-fixation method had proved successful in testing the sera of cattle with contagious bovine pleuropneumonia. Possibly, however, their antigen was not suitable for testing human sera because, although the strains used were of human origin, the medium in which they were cultured contained 10% ox-serum, which during extraction of the antigen may have given rise to some non-specific substance capable of reacting with human serum.

The strain isolated from the blood has been examined by Dr. D. G. ff. Edward, who classifies it with his human type-1 genital strains (Edward 1954). The other strains appear to be culturally and serologically similar.

Bacteriology

All four strains are aerobes and showed very minute colonies on moist fresh defibrinated horse-blood agar after three days' incubation at 37°C on first isolation. Further incubation did not increase the size of the colonies, which dried up and finally disappeared. They were maintained until April, 1954—i.e., from four months to three years—by subculture twice weekly on Fildes extract (5%), human serum or plasma (20%), and nutrient agar † without protection by antibiotics or other selective inhibitors. Their morphology and cultural characteristics remained constant, and there was no sign of reversion to a normal bacterial form. They are now maintained on a selective medium to lessen the risk of contamination. They are all sensitive to aureomycin, oxytetracycline, and chloramphenicol, moderately sensitive to streptomycin, and resistant to penicillin and erythromycin.

All four strains from these patients and two others isolated in mixed culture from the cervix of patients attending the venereal-disease clinic appeared to be serologically homologous when tested against either the human sera or the specific rabbit sera. High-titre rabbit sera inhibited their growth (Edward 1950), but this effect was not seen with the comparatively low-titre human sera.

Discussion

These four patients all showed a clinical picture of infection. Culture of appropriate specimens under conditions suitable for the growth of aerobic and anaerobic pyogenic bacteria yielded a heavy growth of P.P.L.O., and no other cause for the symptoms could be found. In three of the cases recovery followed treatment with aureomycin, to which the strains were sensitive, when

† Nagler's medium for the identification of *Cl. welchii* (Hayward 1941).

other treatment had failed. In two cases the microbe could not be isolated from the original site of infection after treatment with aureomycin. Finally, in three of the patients specific antibody developed during the infection, reached a maximal titre at about three weeks during convalescence, and fell thereafter. No antibody was found in sera from uninfected patients or in the sera of patients with other infections.

There is therefore good evidence that the P.P.L.O. isolated from these patients were responsible for the clinical symptoms. It might, however, be argued that some other pathogen had been killed by antibiotic treatment before the specimens were taken. This does not apply to case 4, who received no antibiotics, and seems unlikely in the other cases, since there was no clinical improvement until an antibiotic effective against P.P.L.O. was used. Primary infection by a virus could be postulated; but a purulent exudate, present in three of these cases, is not a feature of the virus infections so far recognised. Symbiotic infection with a virus cannot be excluded, but in the absence of evidence such an explanation seems needlessly complex.

Case 4 is particularly interesting because, even though the infection was clinically very mild and was followed by spontaneous recovery, specific antibodies developed. The titre was not very high, but the gonococcal complement-fixation test often yields titres which are no higher but which are nevertheless accepted as of diagnostic significance.

The serological findings in the cases reported indicate that the complement-fixation test may be useful in the investigation of non-specific urethritis and venereal arthritis. Consistently negative results in tests of samples of serum, obtained from patients at suitable intervals, against pathogenic human genital strains of P.P.L.O. would make it very improbable that such organisms were responsible for the clinical condition. Application of the test does not require the maintenance of fresh cultures of the organism, for a freeze-dried preparation of antigen remains suitable for at least nine months.

Summary

Four cases of human infection with P.P.L.O. are described: two of puerperal sepsis, one pyosalpinx, and one postoperative empyema. Methods of preparing antigen for serological diagnosis and for the isolation of these microbes from infected discharges are briefly described.

Impression preparations are essential for the microscopical examination of colonies.

Solid media must remain moist during three or four days' incubation.

The material examined must be fresh or taken on a swab and placed in transport medium.

Antigen suitable for human serological diagnosis by complement fixation is a concentrated living suspension of the organism.

I wish to thank Prof. Wilson Smith for his encouragement and advice throughout this investigation, and his technical staff for help in the preparation of antigens; Dr. P. M. Roberts for isolating the strain from case 1 and for maintaining the cultures for several months; Dr. E. F. Bowers for isolating the strain from case 4; Dr. F. O. MacCallum for sending serum from cases of respiratory infection; Dr. D. G. ff. Edward for examining strain 1345; and Mr. J. D. S. Flew, Prof. R. S. Pilcher, and Prof. W. C. W. Nixon for permission to publish their cases.

REFERENCES

Belyavin, G. (1953) *J. Hyg., Camb.* **51**, 492.
Beveridge, W. I. B., Campbell, A. D., Lind, P. E. (1946) *Med. J. Aust.* i, 179.
Edward, D. G. ff. (1950) *J. gen. Microbiol.* **4**, 311.
— (1954) *Ibid*, **10**, 27.
Hayward, N. J. (1941) *Brit. med. J.* i, 811.
Moffett, M., Young, J. L., Stuart R. D. (1948) *Ibid*, ii, 421.
Nicol, C. S., Edward, D. G. ff. (1953) *Brit. J. ven. Dis.* **29**, 141.
von Haebler, T., Miles, A. A. (1938) *J. Path. Bact.* **46**, 245.

ŒSOPHAGEAL REFLUX

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ŒSOPHAGEAL reflux has received much attention from radiologists and surgeons, so its incidence and clinical features are well known; but the conditions under which the cardia becomes incompetent, except the common association with hiatus hernia, have remained obscure.

In the investigation described here the intra-œsophageal and intragastric pressures were measured in an attempt to define the changes accompanying reflux and to find if any constant pattern of events precipitated reflux.

Methods

The pressures were measured, through fine 'Polythene' tubes, with Hansen capacitance manometers (Dornhorst et al. 1954). In most experiments three tubes were used together, joined at the tip and recording through lateral holes usually 5 cm. apart. The tubes were filled with water, and the distal parts beyond the recording-holes were filled with mercury, which enabled the exact position of the recording-holes to be localised by radiography. The respiratory movements were simultaneously recorded by pneumography.

Twelve cases of œsophageal reflux were investigated; in four of these the cardia was in the normal position, determined by barium studies, and in eight a hiatus hernia was present. Twelve cases with normal function of the cardia were studied as controls.

Results

Recognition of Reflux from Pressure Changes

A pressure change due to œsophageal reflux could be detected. In two cases simultaneous screening of the patient after drinking a barium emulsion confirmed the relation between the pressure change and the radiological appearance of reflux. Superimposed on the normal respiratory pressure-swing a positive pressure-wave about 5 mm. Hg passed very rapidly up the œsophagus (fig. 1). This wave lasted 1–2 sec. and was a simple peak in shape, often leaving the œsophageal pressure at a slightly higher level than before until the refluxed substance was expelled from the œsophagus. In this latter respect it resembled the initial rise in pressure in the œsophagus

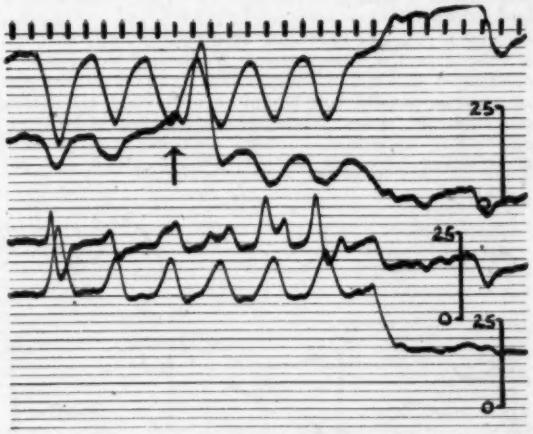

Fig. 1—Recording from patient, with normal position of the cardia, leaning forward in bed. Top tracing: pneumogram (inspiration downwards). Lower three tracings are recordings from tubes 5 cm. apart: top tube in œsophagus; middle tube at cardia; lowest tube in stomach. Arrow indicates reflux initiating propulsive wave. At the end of the recording the patient changes position (see fig. 2).

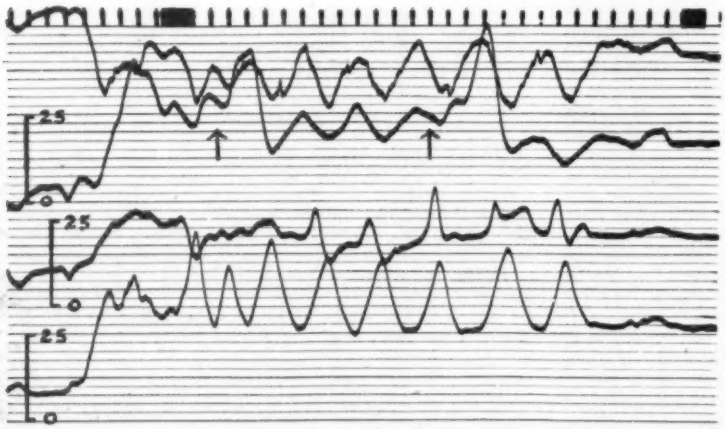

Fig. 2—Recording from same patient as fig. 1 leaning forward at beginning of recording. Top tracing: pneumogram (inspiration downwards). Other tracings as in fig. 1. Arrows indicate reflux shown in œsophageal tracing by diminished fall in pressure with inspiration followed by propulsive waves. Final signal at top of record marks onset of heartburn.

on swallowing. Similar pressure-waves were seen whether the substance refluxed was fluid or gas. In cases where gas was refluxed the positive pressure-wave appeared simultaneously in all parts of the œsophagus. Where the substance refluxed was fluid the pressure-wave was sometimes limited to the lower œsophagus and sometimes diminished in height as it progressed upwards. No general rise in intragastric pressure near the cardia preceded reflux, and the shape of the wave and the rapidity of its passage showed clearly that this was due entirely to the entry of gastric contents into the œsophagus and not to reverse peristalsis. Reverse peristalsis has never been observed in any case of œsophageal reflux and only in one patient who had a postoperative stricture at the lower end of the œsophagus. Instead of the positive wave there may be only a failure of the intra-œsophageal pressure to drop with inspiration, but this seems to be less common (fig. 2).

Œsophageal Reaction to Reflux

When gastric fluid appeared in the œsophagus, a propulsive wave was often initiated which progressed normally to the cardia, leaving the intra-œsophageal pressure at a normal level (fig. 1). This wave seemed to be caused by the presence of fluid in the œsophagus, because it could be provoked by injecting water through a tube into the œsophagus. Following the pressure changes of gas reflux the pressure in all parts of the œsophagus usually rose simultaneously and eructation occurred. In patients with the symptoms of œsophagitis reflux sometimes initiated uncoördinated contractions, many of which seemed to be localised and did not proceed normally toward the cardia. Œsophageal pain developed within 30 sec. after the entry of gastric fluid into the œsophagus and was not related to the œsophageal contractions (fig. 2).

Conditions Predisposing to Reflux

A reflux wave occurred only during inspiration. Furthermore when reflex was present it started at the beginning of inspiration, and the reflux wave rose simultaneously with the increase in intragastric pressure. Reflux did not occur with every inspiration and was sometimes intermittent (fig. 2).

Reflux occurred more commonly in some positions than others. It was most often found with the patient leaning forward while sitting in bed, and after this with the patient supine. Small variations in the patient's posture sometimes caused reflux. The pressure difference across the cardia was measured in various positions by withdrawing a recording tube from the stomach to the œsophagus (fig. 3). The pressure difference varied by only 1–2 mm. Hg in all positions from lying supine to toe-touching and was about 7 mm. Hg. In positions, such as toe-touching, where the abdomen is compressed the intragastric and intro-œsophageal pressures about the cardia rose together.

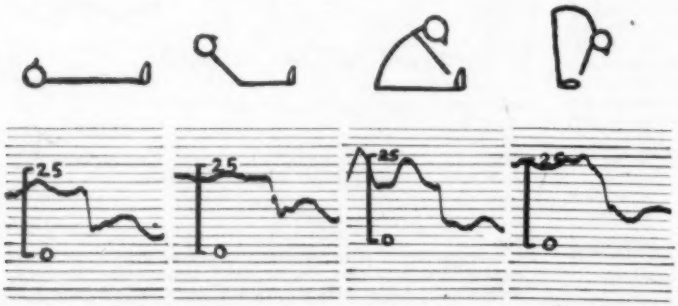

Fig. 3—Tracings show recording tube being quickly withdrawn from stomach to œsophagus in different positions. Note that pressure difference during expiration varies by only a few mm. Hg.

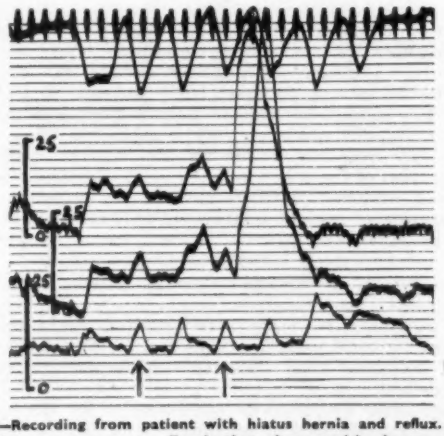

Fig. 4—Recording from patient with hiatus hernia and reflux. Top tracing: pneumogram (inspiration downwards). Lower three tracings are recordings from tubes 5 cm. apart: upper two tubes in œsophagus; bottom tube in hernia. At start of recording patient changes position slightly and then reflux occurs (arrows) which initiates propulsive wave. Note similarity of pattern from hernia to that of normal intragastric pressure.

Pressures in Hiatus Hernia

The observations listed above were collected mainly from patients in whom the cardia was in the normal position. Similar results were obtained from patients with hiatus hernia (fig. 4). Pressure recordings from tubes placed within a hernia often showed variations from the usual respiratory intrathoracic swing recorded in the œsophagus. The common pattern was a bifid positive

wave with inspiration (fig. 5) though occasionally the pattern closely followed that of the intragastric pressure-swing (fig. 4). It was shown in these cases that the cardia was not incompetent the whole time. A recording tube at the cardia showed with inspiration an initial rise of pressure followed by a fall as the descending diaphragm pulled the closed cardia over the tube. When the cardia was open, this pattern was altered and the pressure did not fall.

Discussion

From these observations on pressure changes the following facts about œsophageal reflux become apparent:

(1) It is possible to recognise reflux as a positive pressure-wave in the œsophagus and, less often, by a diminished drop in intra-œsophageal pressure during inspiration.

(2) Reflux takes place only during inspiration.

(3) Reflux takes place in some positions more commonly than others, and small changes in posture may render the cardia incompetent.

(4) These changes in posture are not accompanied by any appreciable change in the pressure gradient across the cardia.

The structures forming the cardia are mobile, and changes in their relative positions are easily induced by alteration of posture. This can be seen from routine barium-meal radiographs. Probably in patients with œsophageal reflux the competence of the cardia depends on its relative anatomical shape. The association with inspiration is interpreted as positional, the descending diaphragm flattening the fundus of the stomach. There is no evidence of a pressure change forcing the cardia open or of reverse peristalsis. Dornhorst et al. (1954), directly examining the normal cardia at operation, could render it incompetent only by manipulating the fundus so that it formed an obtuse angle with œsophagus. These workers have shown that the cardia acts as a valve, and postulate that it is formed by the lax gastric mucosa in this area. The above-mentioned observations fit well with this conception, because changes in the shape of the cardia must be reflected by changes in the tensions on its mucosa.

The fact that reflux takes place solely with inspiration is further evidence that the right crus of the diaphragm plays no part in maintaining the competence of the cardia, because its effect should be maximal during this time.

This method of detecting œsophageal reflux may be of value because it is well known that reflux may be difficult to demonstrate radiologically in cases where the clinical diagnosis is reasonably certain.

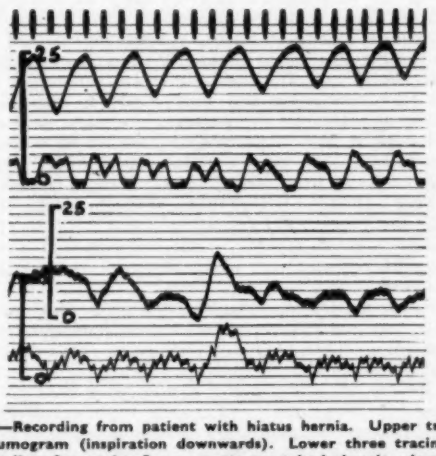

Fig. 5—Recording from patient with hiatus hernia. Upper tracing: pneumogram (inspiration downwards). Lower three tracings are recordings from tubes 5 cm. apart: top tube in hernia; lower two in œsophagus. This is reverse of positions in figs. 1, 2, and 4. Note bifid pattern of respiratory pressure-swing from hernia.

Summary

Œsophageal reflux is accompanied by pressure changes in the intra-œsophageal pressure which can be used to detect its occurrence.

Reflux takes place only during inspiration and more commonly in certain positions of the patient than in others. There is no appreciable change in the pressure gradient across the cardia in these positions, and it is postulated that the competence of the cardia depends on its anatomical shape.

No evidence was found of reverse peristalsis, and the observed facts fit well with the conception of a mucosal valve guarding the cardia.

I wish to thank Dr. A. C. Dornhorst for help and encouragement during this investigation, and Mr. R. W. Halls and Mr. M. G. Ventom for technical assistance.

REFERENCE

Dornhorst, A. C., Harrison, K., Pierce, J. W. (1954) *Lancet*, i, 695.

APLASTIC ANÆMIA FOLLOWING MEPACRINE TREATMENT OF LUPUS ERYTHEMATOSUS

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THE earliest reference to the treatment of lupus erythematosus with mepacrine appears to be that by Popoff and Kutintscheff (1943), who recorded the successful treatment of 6 patients. Page (1951) reported a series of 18 patients in many of whom the drug controlled the lesion, and this form of treatment is now firmly established.

The toxic effects have included blood dyscrasia. Apra (1953) described leucopenia, and Wilkinson (1954) agranulocytosis. Vilanova and de Morages (1953) reported 1 death from agranulocytosis. Sawicky et al. (1952) and Parmer and Sawitsky (1953) each noted 1 fatal case of aplastic anæmia in patients with lupus erythematosus who had been treated with mepacrine. A further such case is reported here.

Case-report

A woman farm-worker, aged 53, had had chronic discoid lupus erythematosus for some years, and in 1952 she was successfully treated with mepacrine hydrochloride 100 mg. t.d.s. Thereafter she took intermittent courses of mepacrine in this dosage. In February, 1954, because of a relapse in her skin condition, she again started to take mepacrine hydrochloride 100 mg. t.d.s. and continued until she had taken about 200 tablets (20 g.). In early May, a fortnight before admission, she stopped taking the drug, and then noticed two large bruises which had appeared without apparent preceding trauma. Thereafter bruises appeared at short intervals, and later purpuric spots, especially on the legs, followed by melæna and hæmatemesis. Her consumption of foods containing ascorbic acid had been low, and her doctor had prescribed tab. ascorbic acid 50 mg. t.d.s. on the day before admission. There was no family history of a bleeding diathesis.

Examination.—The patch of lupus erythematosus was scarcely discernible as a faintly pigmented area on the left cheek. The skin of the face, forearms, and legs was conspicuously yellow. There were numerous petechiæ on the trunk and limbs, together with many ecchymoses of varying age and size, some as large as 2 in. in diameter. No enlargement of lymph-glands was found. Systematic examination showed no other relevant abnormality.

Investigations.—Urine, normal. Blood: Hb 64% (Haldane); red cells 3,150,000 per c.mm.; white cells 1900 per c.mm. (neutrophils 24%, lymphocytes 76%); platelets 70,000 per c.mm.; clotting-time 7 min.; bleeding-time over 80 min.; Hess test positive; erythrocyte-sedimentation rate 118 mm. in 1st hr. (modified Westergren). Serum bilirubin 0·5 mg. per 100 ml. Plasma-proteins 5·7 g. per 100 ml. (albumin 4·2, globulin 1·5). Cephalin-cholesterol flocculation test negative. Alkaline phosphatase 9 King-Armstrong units. Prothrombin concentration 100%. Ascorbic-acid saturation test (700 mg. given daily by mouth): urinary output 11 mg. on 1st day and 66 mg. on 2nd day.

Progress.—On the day after admission, blood examination showed: Hb 29% (alkaline hæmatin) (4·4 g. per 100 ml.); red cells 1,380,000 per c.mm.; packed-cell volume 13%; mean corpuscular volume 94 c.μ, mean corpuscular hæmoglobin concentration 34%; white cells 2600 per c.mm. (neutrophils 29%, lymphocytes 70·5%, monocytes 0·5%); platelets 25,000 per c.mm.; bleeding-time over 60 min.; coagulation-time (capillary tube) $2^1/_2$ min. Sternal puncture showed a few scattered, damaged marrow cells, on which a definite opinion could not be passed.

After transfusion of three bottles of blood (approximately 1500 ml.) the hæmoglobin was 42% (Haldane). The patient then became febrile, and despite treatment with penicillin and later erythromycin her condition deteriorated. Bullæ appeared on the trunk, and the hæmatological findings remained virtually unchanged. A course of corticotrophin (Armour) 80 units daily was given for 4 days, but she died in coma on the 11th day in hospital. Blood for culture taken 2 days before death proved sterile.

Necropsy.—The examination was made 19 hours after death. Advanced putrefactive changes were present, with swelling of the face, neck, and abdomen. The superficial veins were outlined in a dark red colour. The subcutaneous tissues were crepitant, and rigor mortis had passed off. Diffuse petechial hæmorrhages and ecchymoses were present with areas of superficial desquamation, some ulcerated. Internally, the only distinct lesions were petechial hæmorrhages in the subepicardial fat and throughout the mucosa of the whole intestinal tract. The marrow of the mid-shaft of the femur showed no evidence of reactive hyperplasia.

Microscopically, all organs had been invaded by *Clostridium welchii*. Sections from the bullous areas showed a superficial line of separation in the epidermis, in or just below the keratin layer. No polymorph reaction was present in the blister-fluid or deeper layers, and no inflammatory reaction at the buttock ulcer—a former injection site. There were no changes suggesting lupus erythematosus in the renal glomeruli.

Bone-marrow (vertebral) showed a few small scattered foci of hæmopoietic cells, which, owing to putrefactive changes, could not be identified. The appearance was consistent with marrow aplasia.

Discussion

Custer (1946) found 57 fatal cases of aplastic anæmia among Servicemen in the South-West Pacific theatre, where the vast majority took suppressive doses of mepacrine (100 mg. daily). In other war theatres the incidence of aplastic anæmia in the Services was, by comparison, insignificant.

Fishman and Kinsman (1949) described 7 military patients who had been on suppressive treatment with mepacrine and developed hypoplastic anæmia; 3 of these eventually died. Bruce-Chwatt and Bruce-Chwatt (1950) and Riesgo (1951) reported similar fatal cases.

It would seem well to bear in mind the possibility of bone-marrow damage in patients treated with mepacrine. Although agranulocytosis can occur without warning, by regular blood-counts impending marrow aplasia might sometimes be recognised before irreparable damage had occurred. That this is possible is suggested by the experience of Fishman and Kinsman (1949). Of their seven patients, four recovered.

Summary

Fatal aplastic anæmia is reported in a patient with localised lupus erythematosus who had been treated with mepacrine.

The risk of marrow aplasia resulting from protracted administration of mepacrine should be remembered in treating patients with lupus erythematosus.

We are grateful to Dr. J. M. Drennan for the pathological report.

REFERENCES

Apra, A. (1953) *Dermatologia, Budapest*, **4**, 206.
Bruce-Chwatt, L. J., Bruce-Chwatt, J. M. (1950) *Brit. med. J.* ii, 7.
Custer, R. P. (1946) *Amer. J. med. Sci.* **212**, 211.
Fishman, A. P., Kinsman, J. M. (1949) *Blood*, **4**, 970.
Page, F. (1951) *Lancet*, ii, 755.
Parmer, L. G., Sawitsky, A. (1953) *J. Amer. med. Ass.* **153**, 1172.
Popoff, L., Kutintscheff, M. (1943) *Derm. Wschr.* **116**, 186.
Riesgo, R. R. (1951) *Rev. med. C. Rica*, **10**, 193.
Sawicky, H. H., Kanof, N. B., Silverberg, M. G., Braitman, M., Kalish, B. (1952) *J. invest. Derm.* **19**, 397.
Vilanova, X., de Morages, J. M. (1953) *Ann. Derm. Syph., Paris*, **80**, 360.
Wilkinson, D. S. (1954) *Brit. J. Derm.* **66**, 190.

MALIGNANT SENSORY NEUROPATHY

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IT has been recognised for many years that neurological disturbances are occasionally associated with malignant disease in the absence of any obvious metastatic involvement of nervous tissues. Recorded cases, though still comparatively few, suffice to show that a "wide range of unusual neurological disorders accompanies carcinoma with a significant frequency" (Henson et al. 1954). Among these disorders subacute cortical cerebellar degeneration (Brain et al. 1951), proximal motor neuropathy (Hart 1954), and sensory neuropathy (Denny-Brown 1948) are separable as fairly distinct entities, but other less well defined clinicopathological states result from lesions involving virtually any part of the central and peripheral nervous systems and also muscle. Thus myopathy, mixed types of polyneuritis involving both peripheral and cranial nerves, pyramidal-tract lesions, and mental changes occur sometimes in almost pure forms but more often in varying combinations. Henson et al. (1954) recently described five cases of cerebellar disease, six of neuropathy, and eight of myopathy, and Heathfield and Williams (1954) two cases of sensory neuropathy, one of motor neuropathy, and one of myopathy; these two reports demonstrate the diversity of neurological disorders that may be associated with carcinoma. Furthermore, purpuric states, venous thromboses (Oelbaum and Strich 1953, Williams 1954), and carcinomatous emboli (Smith and Whitfield 1954) are sometimes associated with carcinoma and may result in neurological lesions responsible for the presenting clinical features.

Instances in which peripheral neuritis of wholly or dominantly sensory type was associated with bronchial carcinoma have been described by Parkes Weber and Hill (1933), Denny-Brown (1948), Wyburn-Mason (1948), Kremer and Pratt (1952), Heathfield and Williams (1954), and Henson et al. (1954); while Dodgson and Hoffman (1953) recorded a case in which the primary growth was œsophageal.

The neuropathy has usually been gross and ataxia a striking feature. Necropsy has shown demyelination of the posterior columns and posterior nerve-roots, degeneration of nerve-cells in the posterior-root ganglia with the development of cellular nodules resembling the "residual nodules of Nageotte" (Nageotte 1907), peripheral-nerve degeneration, and some muscle atrophy.

Gross neuropathy of wholly sensory type is rarely found, and there can be no doubt that in the absence of diabetes and alcoholism malignant disease is almost

certain to be present, even though at first it may not be easy to detect. A striking example of this type is described below.

Case-report

A married woman, aged 66, was first seen on June 16, 1952. She had always been of nervous temperament but otherwise had been healthy until February, 1952. She then developed a feeling of burning and smarting all over her abdomen and down both legs. Her legs felt wooden, and she could not walk properly; her arms felt cold, and her fingers numb and weak. About six weeks before she was first seen she had sustained a bottle burn of the right foot which appeared to be accompanied by strikingly little pain. Her consumption of alcohol throughout life had been negligible.

Examination.—The patient's gait was very ataxic, and there was loss of sense of position and of sensibility to deep pain and pinprick over the legs and feet, while the hands showed loss of sensibility to vibration and pinprick. The ankle-jerks, the right biceps-jerk, and both triceps-jerks were absent. There was no motor loss or wasting. The hæmoglobin was 100%; there was no glycosuria; the chest radiograph was clear; and no abnormality could be detected in the abdomen or pelvis.

Course.—The patient was treated with vitamin-B complex, but in view of her failure to improve she was admitted to the Queen Elizabeth Hospital, Birmingham, on Dec. 27, 1952. A month before admission she had sustained a further deep but painless burn of the right knee from sitting in front of the fire. There was still no motor loss or wasting in the limbs, but

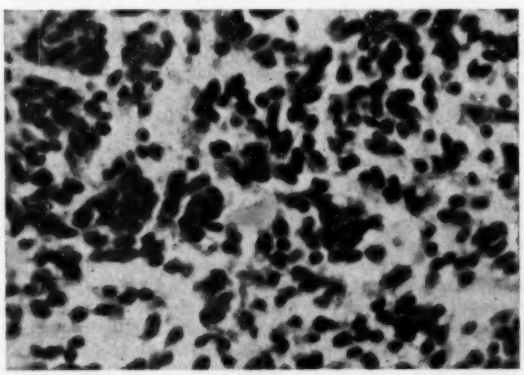

Fig. 1—Anaplastic small-cell carcinoma of bronchus. (Hæmatoxylin and eosin.)

the sensory polyneuritis was much more severe. The gait was grossly ataxic; all the tendon-jerks were absent in upper and lower limbs; and there was pronounced impairment of all forms of sensation in the hands and forearms and the whole of the lower limbs. Even over the trunk sensory acuity was somewhat diminished. A blood-count was normal, and a fractional test-meal showed abundant free acid. The cerebro-spinal fluid (C.S.F.), which was under normal pressure, showed no abnormality on cytological and chemical examination. The Wassermann reaction was negative in blood and C.S.F., and the urine did not contain lead, porphyrins, or arsenic. The patient had obviously lost a great deal of weight and so a careful search for malignant disease was again instituted. A chest radiograph showed no abnormality; the breasts and thyroid were normal; radiography after a barium meal showed no abnormality in the alimentary tract; nothing abnormal was found in the urine; and the fæces were negative for occult blood. A complaint of previous vaginal bleeding was investigated by a gynæcologist. Dilatation and curettage showed senile endometritis but no evidence of a pelvic neoplasm.

As the patient's husband was dying of a pancreatic neoplasm she left hospital after a month and was not seen again until July, 1953. She was then so ataxic that she could scarcely stand or walk. Motor power in the upper and lower limbs remained good; but all tendon-jerks and the plantar responses were absent, all forms of sensation were totally lost below the inguinal ligaments, and perception of pinprick and light touch were grossly impaired in the forearms and hands,

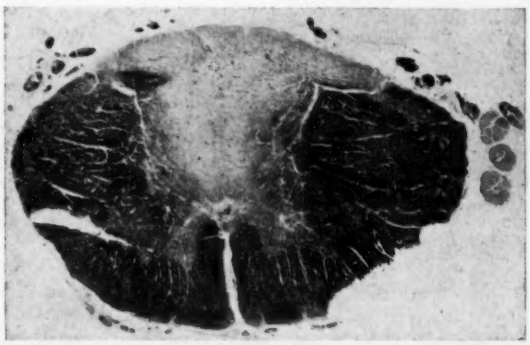

Fig. 2—Cervical cord showing demyelination of posterior columns and posterior roots. The nick marks the right anterolateral column. (Frozen section, Weil's myelin method.)

particularly the left. Blisters were present on both heels. Cough and sputum had been troubling the patient for two or three weeks, and a large right pleural effusion was present which on aspiration was found to be bloodstained. Radiography of the chest showed a mass in the right lower hilar area, and radiography with a barium swallow showed indentation of the œsophagus at the level of the tracheal bifurcation and again two inches below. Auricular fibrillation was present. The patient's general condition was very poor; and she became progressively more dyspnœic and died one week after admission, eighteen months after the onset of neuritic symptoms.

Necropsy

A large carcinoma of the right lower-lobe bronchus was infiltrating the lung substance and extending proximally along the bronchus towards the tracheal bifurcation. There was a right pleural effusion of about three pints, and a large mass of hilar lymph-nodes containing secondary deposits was displacing the œsophagus anteriorly and infiltrating the posterior surface of the heart. No other metastases were found on naked-eye examination anywhere in the body. Ante-mortem thrombus was found in the ascending aorta and was adherent to the aortic valve. The brain and spinal cord showed no significant naked-eye changes.

Histologically the bronchial growth was an anaplastic carcinoma composed of small darkly staining round and oval cells (fig. 1); an "oat-cell" type of structure was seen in many areas. Sections of lung remote from the carcinoma showed no infiltration. The hilar lymph-nodes were extensively infiltrated with secondary growth, as was the whole thickness of the left auricular myocardium, carcinoma cells being present on the endocardial surface. Partly necrotic cellular tissue resembling degenerating carcinoma was seen in the centre of the aortic thrombus, but no unequivocal non-degenerate carcinoma was present. Apart from interstitial

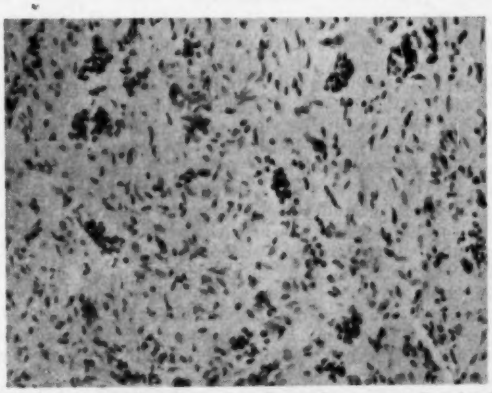

Fig. 3—Low-power view of a section of posterior-root ganglion showing loss of neurones and numerous "residual nodules." (Hæmatoxylin and eosin.)

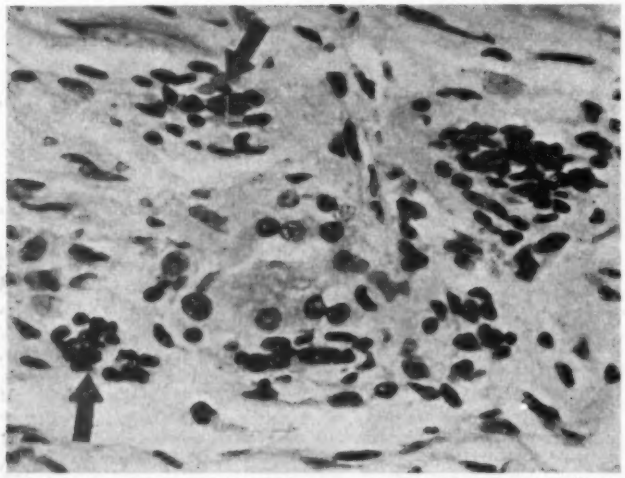

Fig. 4—High-power view of posterior-root ganglion showing three adjacent "residual nodules" (arrowed) arranged around a degenerate ganglion cell which is in the centre of the field. Note the smaller clusters of dark cells just below this degenerate ganglion cell. (Hæmatoxylin and eosin.)

fibrosis of the thyroid no other significant changes were seen in any other viscera, including the endocrine organs. The bone-marrow was normal.

The spinal cord showed demyelination of the posterior columns with slight gliosis (fig. 2). The posterior roots were demyelinated; but the anterior roots, anterior horns, and anterior and lateral columns all appeared normal. The posterior-root ganglia showed a great reduction in the number of ganglion cells and numerous clumps of small cells with darkly staining round or oval nuclei and only a small amount of cytoplasm; some of these cellular clumps were ringed by larger, paler, capsular cells. These resembled the "residual nodules of Nageotte" which are said to develop as a result of changes in the periganglionic satellite cells, after degeneration of ganglion cells which have disappeared by the time the nodules are fully developed (figs. 3 and 4). Lipo-fuscin pigment was demonstrated in relation to some of the nodules and in the few surviving ganglion-cells by the periodic acid-Schiff stain. There was patchy wallerian degeneration of the peripheral nerves; and sections from the leg, lumbar, shoulder, and intercostal muscles showed non-specific atrophic changes. The only other changes in the nervous system consisted of occasional foci of small darkly staining cells in the cerebral perivascular spaces, subarachnoid space, posterior roots and ganglia, and the epidural fat around these ganglia. Some of these cells were lymphocytes, but others were atypical and possibly carcinoma cells.

Discussion

The histological features in this case accord very closely with the descriptions of Denny-Brown (1948), Heathfield and Williams (1954), and Henson et al. (1954), and the clinical features of all recorded cases have been almost identical. It appears that there is a dominantly or wholly sensory neuropathy of distinctive character, resulting from changes in the posterior-root ganglia, posterior roots, and posterior columns, which occurs in association with carcinoma. The carcinoma has always been bronchiogenic except in the case described by Dodgson and Hoffman (1953), in which the primary neoplasm was a squamous carcinoma of œsophagus. In this case the only available fragment of posterior-root ganglion did not show typical "residual nodules." Pathological evidence of sensory neuropathy secondary to degeneration of posterior-root ganglia and unassociated with carcinoma has not so far been recorded, although McAlpine and Page (1951) suggested that this can occur.

The association between the carcinoma and the neuropathy has given rise to much speculation. Denny-Brown (1948) drew attention to the similarity of the histological changes in deficiency of pantothenic acid and of vitamin E in animals, and suggested that bronchial carcinoma may possibly produce a by-product interfering with the metabolism of pantothenic acid. So far no improvement has been claimed from vitamin therapy. It has been suggested that the neoplasm and the neuropathy may have a common cause, but known carcinogens are generally so different from nerve poisons and act at such different rates that the nature of such a common cause is difficult to conceive (*Lancet* 1954).

Since this form of sensory neuropathy is so commonly associated with malignant disease the possibility that it *may* be due to metastatic deposits of unusual type has to be considered. Extrathoracic metastases visible on naked-eye examination are not usually present; this absence of extrathoracic spread was noticeable in our case, especially as the growth had infiltrated the myocardium and by reaching the endocardial surface of the left auricle had gained access to the general circulation. In these cases some factor may prevent the development of typical metastases, and therein may lie the key to the problem. Three cases of "encephalitic metastatic carcinoma" secondary to bronchogenic carcinoma have been recorded (Madow and Alpers 1951) in which macroscopically no metastases were found in the central nervous system but microscopy showed clusters of carcinoma cells in the perivascular spaces and lying free in the substance of the cerebral hemispheres, brain-stem, cerebellum, and spinal cord.

Because in our case the cells of the "residual nodules" found in the posterior-root ganglia and the cells of the primary carcinoma were morphologically similar the possibility that the nodules contained carcinoma cells has been considered (figs. 1 and 4). Since, however, there is no consistently reliable histological method for demonstrating isolated clumps of carcinoma cells, the possibility that the "residual nodules" in the dorsal-root ganglia contained carcinoma cells is still sub judice. Even if carcinoma cells were present it is difficult to explain how they could spread from the lung to the posterior-root ganglia and become arranged as nodules at the site of the nerve-cells. Provided that such cells could reach the subarachnoid space it would perhaps be possible for them to penetrate into the posterior-root ganglia in the way described for particulate matter by Brierley (1950), who showed that an india-ink suspension injected into the cisterna magna of rabbits found its way into the posterior-root ganglia where it had a perineuronal distribution, outlining the nerve-cells. It has also been shown that india ink injected into the cranial subarachnoid space of the rabbit will find its way into the lymph-nodes on the posterior thoracic and abdominal walls (Field and Brierley 1948, Woollam and Millan 1953). These experiments suggest a possible route along which carcinoma cells may spread from the pulmonary lymph-nodes to the posterior-root ganglia.

Whatever may be the basic cause of the neurological lesions, it seems that the demyelination of posterior columns, dorsal roots, and peripheral nerves results from secondary degeneration of the central and peripheral processes of atrophic posterior-root ganglion cells. Denny-Brown (1948) concluded that the muscle changes in his cases were due to primary muscle degeneration ("polymyositis"), but in our case the atrophic muscle showed no specific histological changes. Meanwhile the practical point is that a carcinoma has been present in all pathologically substantiated cases of this distinctive type of sensory neuropathy, and at the time the neuropathy develops the growth may be occult.

Summary

The clinicopathological features of a case of wholly sensory neuropathy associated with bronchial carcinoma are described.

Such neuropathy may possibly result from an unusual form of carcinomatous infiltration of the dorsal-root ganglia.

We are indebted to Prof. J. W. Orr, Dr. Michael Jefferson, and Dr. A. D. B. Mackie (the patient's own doctor) for their help in the investigation and management of this case. Part of the histological examination was made possible by a grant from the endowment fund of the United Birmingham Hospitals.

REFERENCES

Brain, W. R., Daniel, P. M., Greenfield, J. G. (1951) *J. Neurol. Psychiat.* **14**, 59.
Brierley, J. B. (1950) *Ibid.* **13**, 203.
Denny-Brown, D. (1948) *Ibid.* **11**, 73.
Dodgson, M. C. H., Hoffman, H. L. (1953) *Ann. intern. Med.* **38**, 130.
Field, E. J., Brierley, J. B. (1948) *Brit. med. J.* i, 1167.
Hart, P. L. de V. (1954) *Ibid.* i, 606.
Heathfield, K. W. G., Williams, J. R. B. (1954) *Brain*, **77**, 122.
Henson, R. A., Russell, D. S., Wilkinson, M. (1954) *Ibid.* p. 82.
Kremer, M., Pratt, R. T. C. (1952) *Proc. R. Soc. Med.* **45**, 230.
Lancet (1954) Annotation, ii, 77.
McAlpine, D., Page, F. (1951) *Arch. Middlesex Hosp.* **1**, 250.
Madow, L., Alpers, B. J. (1951) *Arch. Neurol. Psychiat.* **65**, 161.
Nageotte, J. (1907) *Rev. Neurol.* **15**, 933.
Oelbaum, M. H., Strich, S. J. (1953) *Brit. med. J.* ii, 907.
Smith, W. T., Whitfield, A. G. W. (1954) *Brit. J. Cancer*, **8**, 97.
Weber, F. P., Hill, T. R. (1933) *J. Neurol. Psychopath.* **14**, 57.
Williams, A. A. (1954) *Brit. med. J.* ii, 82.
Woodham, D. H. M., Millan, J. W. (1953) *Lancet*, i, 364.
Wyburn-Mason, R. (1948) *Ibid.* i, 203.

Preliminary Communications

IMMEDIATE EFFECTS OF THYROXINE ANALOGUES ON BIOLOGICAL OXIDATIONS IN VITRO

SINCE the elucidation of the structure of thyroxine, two main lines of inquiry have been followed in this field by the thyroid physiologist and biochemist: the nature of the circulating thyroid hormone, and the form in which it is active in the peripheral tissues. The former of these problems has now been resolved, but not the latter. The latent period of action of thyroxine and allied compounds, in vivo and in vitro, has been a puzzle, and a search has been made for a derivative of thyroxine which might produce a rapid thyroid-like effect.

The acetic acid analogues of thyroxine and triiodothyronine have been shown to possess activities similar to that of thyroxine in goitre-prevention assay in rats[1]; the triiodo-acetic acid also raises the metabolic rate of intact rats when given in repeated doses,[1] and gives thyroxine-replacement effects in thyroidectomised birds.[2] It was therefore thought of interest to study the action of these compounds on an in-vitro system.

Thibault[3] has observed that neither thyroxine nor triiodothyronine exerts an immediate effect on the respiration of rat-kidney slices in tyrode buffer, but that, after a prolonged incubation period (3 days) at 4°C, an appreciable rise in oxygen consumption can be seen. The present communication deals with the effects of the acetic acid analogues of thyroxine and triiodothyronine on this system.

METHODS AND RESULTS

Kidney slices from thyroidectomised rats which had been fasted for 24 hours were incubated in tyrode solution in the presence of the two test compounds and in control solutions, and their oxygen consumption was measured at short intervals by the conventional Warburg method. The results are shown in the accompanying table. It will be seen that both compounds produce their maximum effect at the earliest time-interval —15 minutes—and that after 90 minutes the effect had disappeared. It has also been found (figures to be published later) that higher concentrations of both compounds may be ineffective, or may even inhibit respiration in kidney slices. Both compounds are active at dilutions lower than those quoted, and concentrations of triiodothyroacetic acid as low as 1×10^{-7} produce a noticeable effect. At all effective concentrations, both compounds exert their action without any latent period of action.

PERCENTAGE INCREASES IN O_2 CONSUMPTION OF RAT-KIDNEY SLICES

Time (min.)	Tetraiodothyroacetic acid (5×10^{-6})	Triiodothyroacetic acid (1×10^{-6})
15	83	91
30	54	68
60	45	56
90	16	35
15	69	196
30	44	106
60	20	48
90	15	22
15	70	63
30	54	46
60	35	10
90	13	0
15	71	74
30	31	40
60	20	6
90	8	0

Each figure represents the mean of two experimental values.

DISCUSSION

It appears that the acetic-acid analogues of thyroxine and triiodothyronine are effective in raising the oxygen consumption of rat-kidney slices in vitro without any latent period of action. Neither of the circulating thyroid hormones—thyroxine and triiodothyronine—has any effect on this system without a pre-incubation period. This leads us to suggest that these acetic acid derivatives may indeed be the forms in which the thyroid hormones act in the tissues.

In preliminary experiments, one of us (O. T.) has found that a single dose of tetraiodothyroacetic acid 2 mg. per kg. body-weight raises the basal metabolic rate (B.M.R.) of thyroidectomised rats (3 animals) within 0–2 hours, and that the effect wears off after 4 hours. In the whole animal, therefore, this thyroid-like action is very much more rapid than that of thyroxine or triiodothyronine. A higher dose (4 mg. per kg. body-weight) did not raise the B.M.R. of thyroidectomised rats; this lack of action is comparable with the lack of effect of higher doses of the acetic acid analogues in vitro. It would appear from these and from other reported findings that there is a threshold dose for thyroidal stimulation of respiration above which only toxic or inhibitory effects are obtained.

The immediate effects of these acetic acid derivatives on respiration in vitro are worth considering in relation to another system, studied by Thibault and her colleagues.[4,5] These workers have found that thyroxine and triiodothyronine can enhance the sensitisation of isolated intestinal muscle to adrenaline only after a short incubation period, but that thyroxamine and triiodothyronamine exert this effect without any latent period of action. It is not yet known whether the acetic acids or the amines derived from the circulating thyroid hormones occur in the tissues; experiments are now in progress to elucidate these questions.

SUMMARY

The acetic acid analogues of thyroxine and triiodothyronine have been shown to raise the oxygen con-

1. Pitt-Rivers, R. *Lancet*, 1953, ii, 234.
2. Bruce, H. M., Pitt-Rivers, R., Sloviter, H. A. *J. Endocrin.* 1954, **10**, 340.
3. Thibault, O. (In the press.)
4. Lachase, A., Thibault, O. *C.R. Soc. Biol. Paris*, 1951, **145**, 797.
5. Harington, C. R., Thibault, O. *Ibid*, 1953, **147**, 78.

sumption of rat-kidney slices in vitro without any latent period of action.

We wish to thank Sir Charles Harington, SC.D., F.R.S., and Mademoiselle E. Le Breton for their interest and encouragement.

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METABOLIC ABNORMALITIES IN HYPOPHOSPHATASIA

IN 1948 Rathbun [1] reported from this hospital a metabolic disorder which he designated "hypophosphatasia." His report concerned an infant in whom there was defective calcification of bone matrix, associated with levels of serum alkaline phosphatase considerably below the normal range. Since his original description three additional articles [2–4] and two new names ("rickets with deficiency of alkaline phosphatase activity," and "osteodysmetamorphosis fœtalis") have been added to the literature. These contributions have helped to establish the clinical features of the condition.

We are currently studying a female infant who developed a bulging anterior fontanelle at 3 months of age and who manifests the typical abnormalities in the skull, long bones, and serum.

The fundamental disturbance in hypophosphatasia remains a matter of conjecture. We record here two hitherto unreported observations which may prove helpful in elucidating the pathogenesis of the syndrome.

It has been shown previously that serum from a patient with this condition does not inhibit the alkaline-phosphatase activity of normal serum. We have confirmed this and have shown in addition that serum from our patient will produce in-vitro calcification in the cartilage of rachitic rats. We present this as further evidence that defective calcification in hypophosphatasia results from a primary disturbance in the metabolism of bone matrix.

The association in our patient of metabolic bone disease and mild renal insufficiency prompted us to study the urinary amino-acid pattern by paper partition chromatography as described by C. E. Dent. In addition to the usual amino-acids we have repeatedly found a ninhydrin-positive substance similar in every property so far tested to aminoethyl phosphoric ester (NH_2-CH_2-CH_2-O-PO(OH)2). The material is also present in the plasma of our patient, and thus is unlikely to be a product of abnormal renal metabolism. We have learned from McCance and from Dent [5] that they too have found this material in the urine of an infant with hypophosphatasia. Their finding was made independently of ours and at about the same time.

The substance cannot be detected in the plasma of normal persons or in urine. Therefore we are now attempting to establish its identity. If it proves to be aminoethyl phosphoric ester, one might speculate on the possible relation of alkaline phosphatase and the above-mentioned phosphate ester in bone formation.

On the basis of studies of the activity of serum alkaline phosphatase in parents and siblings, other workers have suggested that hypophosphatasia is genetically determined. We have found low concentrations of the same abnormal ninhydrin-positive substance in the father's urine. This finding further supports the suggestion that hereditary factors operate in the ætiology of hypophosphatasia.

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The Research Institute, Hospital for Sick Children, Toronto, Canada — F. H. E. CHRISTIE, B.Sc. McGill

1. Rathbun, J. C. *Amer. J. Dis. Child.* 1948, **75**, 822.
2. Schneider, R. W., Corcoran, A. C. *J. Lab. clin. Med.* 1950, **36**, 985.
3. Sobel, E. H., Clark, L. C., Fox, R. P., Robinow, M. *Pediatrics*, 1953, **11**, 309.
4. Engfeldt, B., Zetterström, R. *J. Pedial.* 1954, **45**, 125.
5. McCance, R. A., Dent, C. E. Personal communications (see subsequent publication by McCance, Morrison, and Dent, *Lancet*, Jan. 15, 1955, p. 131).

New Inventions

SANDAL OF VARIABLE HEIGHT FOR ASSESSING LIMB-LENGTH DISCREPANCIES

LIMB-LENGTH discrepancies are measurable in clinical practice with a tape-measure and, if the patient can stand, by putting the foot of the shorter leg on to wooden blocks of varying heights. This latter method is the standard one when ordering raises to the shoe or when ordering surgical boots which contain an inbuilt raise.

The main drawbacks of this technique are in the patient's inability to walk with the suggested raise in position and the considerable discomfort of putting half their body-weight on blocks when the raises required are different for forefoot and hindfoot. Because of these disadvantages the patient's opinion about the correct height is often inaccurate, and perhaps an expensive surgical shoe made to a prescription obtained from testing with blocks has to be altered later, when walking in the flexible shoe enables the patient's opinion to be more accurate.

To overcome these difficulties a wearable pliable sandal has been devised which incorporates a raise of the heel variable from $^3/_4$ in. to 2 in. and of the sole from $^1/_2$ in. to 1 in.

The basic sandal can be made for adults and children. For adults a length of 10 in. can be used for either sex.

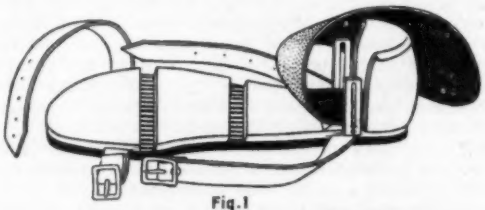

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

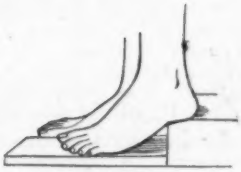

Fig. 7

Since there is no toe-cap, a foot longer or shorter than the sandal can be accommodated. The design is shown in fig. 1, where the sole is seen to be composed of three sections of five-ply wood 1/4 in. thick, which are connected by a piece of rubber, nailed under them, which is 1/4 in. thick and shaped to serve for either foot. Rubber used for floor-tiling is satisfactory. Leather straps pass between the toe-piece and the rubber and between the heel-piece and the rubber; these should be recessed into the wood to give a flat tread.

At the heel two aluminium slotted bars are screwed to the heel-piece to stand vertically at its inner and outer edges; they are connected by a cross-piece of aluminium which, like the leather straps, passes across the sandal between the five-ply and the rubber. Fitting in the bottom of the slot and able to move up to any desired position is a small heel-piece of three-ply on to the top of which is stuck a thin leather insole. The combined thickness of these is 1/4 in.; the insole is flimsy, its thickness is negligible, and it presents a smooth surface to the sole of the foot no matter what raise is used. To the circumference of this piece of three-ply is attached a sturdy heel-cap taken from an old shoe. Just in front of the edges of the heel-cap small screws are inserted into the three-ply to enable it to travel freely up and down in the slots of the heel-piece. This is the basic sandal.

For varying the heel height five separate platforms of five-ply of gradually decreasing length but of the same breadth and height as the five-ply of the heel-piece are used (fig. 2). Each of these has a small hook at the back for easy withdrawal or insertion. These are not in any way connected to the sandal proper. They lie in the desired position between the aluminium uprights and can be slid in and out easily from the back of the sandal (figs. 3 and 4).

For raising the sole five-ply is not used, because this would be rigid. Instead floor rubber 1/4 in. thick is used. Fig. 5 shows two pieces laid between the flimsy insole and the segmented sole; the strap at the front plus body-weight keeps them in position. The fixed sandal, complete with 1 1/4 in. heel and 1/2 in. sole raise, is shown both during resting (fig. 5) and during walking (fig. 6). Compare the awkwardness shown in equalising a discrepancy with blocks (fig. 7).

The height of the sandal without additional blocks—i.e., as shown in fig. 1—is heel 3/4 in., sole 1/2 in. By measuring the height of the heel and sole of the shoe the patient is wearing on the normal leg the necessary raise can be assessed accurately.

Without taking the sandal off one can quickly alter the raise on the heel by sliding in or withdrawing a further block; and, since each is exactly 1/4 in. in height, a high degree of accuracy can be achieved and with it a high degree of comfort and economy.

My thanks are due to Mr. W. Sayle-Creer for valuable help with the text; and to Miss Joan Taylor, of the department of medical illustration, Manchester Royal Infirmary, for the drawings.

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Reviews of Books

The Roots of Crime

Editor: the late Sir NORWOOD EAST, M.D., F.R.C.P., formerly lecturer on forensic psychiatry, Institute of Psychiatry, Maudsley Hospital, London. London: Butterworth. 1954. Pp. 181. 30s.

BESIDES papers by the late Sir Norwood East, who was a pioneer in seeking to introduce psychological methods into the public treatment of crime, this book contains contributions by three psychiatrists, a probation officer, and a Metropolitan police magistrate. As might be expected, quality and scope are diverse, and it is hard to determine precisely at whom the book is directed, unless it is the educated layman. The opening chapter by Sir Norwood, on legal and medical advances in criminology, is an interesting historical survey of the growth of the subject. Dr. John Mackwood has had the difficult task of discussing remedial and educational psychotherapy during penal detention, and he makes a gallant and not unsuccessful attempt to explain what psycho-analysis can do, even in the least promising of all environmental circumstances. Dr. Desmond Curran's "psychiatric approach to the offender" is restricted in that it says almost nothing of concepts of dynamic psychology. He writes:

"The sensible view must be that many individuals present social rather than medical problems, as in the case of the work-shy. On the information available to me this also holds for the vast majority of criminals"; and this remark is echoed by Mr. Frank Powell, who writes in the concluding chapter: "About 80% of arrested offenders present social rather than purely medical problems."

But is it nowadays possible to draw so sharp a distinction between the "social" and the "purely medical" aspects of human behaviour? If psychiatrists are to make any useful contribution in this field, surely work-shyness and criminal behaviour of mainly social origin must be earnestly studied. In discussing why psychiatric evidence does not carry more weight in courts of law, Dr. Curran, Dr. Peter Scott, and Mr. Powell put all the blame on those (bad) psychiatrists who make fantastic claims. They might surely have mentioned that lawyers are as prone as other mortals to unconscious resistances.

Dr. Scott, in dealing with the phenomena of criminal behaviour, and the efficacy of punishment, writes:

"Every animal trainer uses punishment, even if he is only demonstrating his disapproval, but he knows full well that he will get nowhere with a frightened or angry animal; he must restore a friendly relationship after the punishment . . . punishment of a child is never complete until he once more feels approved of. . . . Yet [in relation to crime] . . . punishment is expected to act unaided. . . ."

One might go further and say that punishment will never succeed unless it is applied in the context of an enduring relation between the punisher (or what he represents) and the punished. It is the establishment and maintenance of this relation that constitutes the most difficult aspect of the problem of recidivism. Mr. W. Clifford, writing on the rôle of probation in the treatment of offenders, has concentrated much useful factual information, and has commendably eschewed controversial opinion. Mr. Frank Powell, on the magistrate and the psychiatrist, is stimulating but incautious. His picture of the struggle between good and evil in the heart of every man calls to mind the old Negro spiritual:

In my heart there's a good man living and a bad man too;
They both try to tell me what to do;

So far, so good, but the song continues:

Bad man says: "You must do what isn't right";
And the good-a man, the bad-a man, they struggle in my heart, and keep me awake all night.

This, surely, is where psychiatry should come in—before the bad-a man has won, and there is nothing left to do but discuss whether he owes his victory to "social" or "purely medical" causes.

Mechanism of Labour

ERYK RYDBERG, M.D., professor of obstetrics and gynæcology, University of Copenhagen. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1954. Pp. 180. 34s.

SINCE 1935, students of obstetrics have been familiar with Professor Rydberg's ideas on the mechanism of labour and with his elegant and simple models which illustrate the passage of the fœtus through the curved birth canal. Here he discusses in much greater detail his hypothesis that "the movements of the fœtal head during labour are determined essentially by the shape of the head and the shape, elasticity and plasticity of the soft birth canal."

His argument is supported by well-reproduced radiographs, and by a series of experiments on necropsy specimens and on carefully prepared models. Professor Rydberg discusses not only his own conclusions but also the ideas of others who offer advanced mechanical explanations of the distribution of force on the fœtal head and the derivation of the mechanical couples which produce rotation or flexion. A final chapter presents the subject in mathematical form, and analyses the ways in which

an object as asymmetrical as a skull can translate and rotate within the narrow confines of the birth canal. Being mainly an account of what happens during normal vertex presentations, the book throws little light on what can be done when all is not normal. Professor Rydberg implies that the shape of pelvis and head, at the outset, determines the shape of things to come, and that subsequent moulding and development of the caput make any attempt to modify the pathway difficult and often undesirable.

The argument is well supported by evidence, but the author has not measured his torques and forces with internal gauges. We may yet come to a fuller understanding of this subject.

Renal Function

Transactions of the Fifth Conference, October, 1953, Princeton, N.J. Editor: STANLEY E. BRADLEY, M.D., associate professor of medicine, Columbia University, New York. New York: Josiah Macy, jun., Foundation. 1954. Pp. 218. $3.75.

IN this conference nineteen American and one British expert participated. Papers were given by Luetscher, Miller, and Bull, and were followed by vigorous discussion. The value of these books is somewhat diminished by the long interval elapsing before publication; and the material of the first chapter has already appeared elsewhere.

Speakers on the nephrotic syndrome dealt with the presence of aldosterone in nephrotic urine and with treatment by corticotrophin and cortisone. Experience was reported of homologous-kidney transplants in man: survival of these transplants was considerably longer than in the dog, even though prolonged complete ischæmia of the transplanted organ was often unavoidable. Results, however, gave little hope of permanent survival of the transplant, except possibly from an identical twin. Present views of the cause and treatment of acute renal failure were discussed; and speakers described modern modifications of treatment, such as the reduction of fluid intake to as little as 800 ml. each day, reliance on carbohydrate alone if oral feeding is used, and the increasing popularity of intravenous feeding by infusion of hypertonic glucose solutions into the superior or inferior vena cava.

The book will be of interest to clinicians concerned with the applied physiology of renal disease, and it draws attention to the present intense research activity in this field.

Techniques de réanimation médicale et de contrôle de l'équilibre humoral en médecine d'urgence

J. HAMBURGER, G. RICHET, and J. CROSNIER. Paris: Flammarion. 1954. Pp. 368. Fr. 2600.

THIS is an unusual book, and correspondingly difficult to judge. The underlying thesis is that many quite different diseases are associated with failure of one or more of the regulating mechanisms by which the healthy body maintains its normality; and that we now know enough of homœostasis to enable us to maintain artificially some of these mechanisms until the natural process has been restored.

The type of mechanism which the authors have in mind is shown by the subjects of successive chapters: the control of respiration, water-balance, electrolyte balance, excretion, the blood, and the circulation. There is also a chapter on the nutrition of the acutely ill patient, and an appendix containing detailed technical methods. The authors believe this to be the first book of its kind, and contend that some things can be excused in a pioneer venture which might be culpable in a textbook of the usual type. On reading through some of their statements they were displeased, they say, to find that they had distorted their views by over-simplifying them. Medical authors, if not readers, will sympathise with them in this experience.

Their underlying idea may well be sound, and their claim that the techniques described are often life-saving is borne out by experience. The presentation is much systematised, perhaps beyond Nature; but the principles expressed seem well established. There is a fair amount of padding, especially in the illustrations (e.g., a drawing of how to make a blood-film, and a drawing of Tallquist's papers in black and white). On the other hand, hardly anything has been omitted—though there is no reference to the B.L.B. mask in a section on oxygen administration which devotes a page (with three illustrations) to the nasal catheter. Much experience and thought are reflected in this compilation, and there is even an architect's design for a future "centre of resuscitation."

Perhaps the chief value of the book is that it gathers together useful information which must otherwise be sought in a whole series of special monographs.

Surgical Technigrams

F. M. AL AKL, M.D., associate attending surgeon, King's County Hospital, New York. New York and London: McGraw-Hill. 1954. Pp. 346. 96*s*.

THIS book is made up of a series of line drawings, each accompanied by a short explanation, of the different stages of 36 operations commonly undertaken by the general surgeon. To describe them, the author has coined the word technigrams.

Each stage of each operation is clearly shown, and there are many drawings for each procedure: no less than 27 illustrate radical cure of an indirect inguinal hernia. At the end of each operation there is a short account of the surgical anatomy—which the author calls anatomechanics—of the part of the body in question; but it is not clear how this differs from ordinary surgical anatomy, or indeed how his technigrams differ from diagrams of operations. The procedures recommended and illustrated are all standard methods and acceptable.

The book should be useful to house-surgeons, registrars, and those practitioners who do not operate frequently.

British Surgical Practice: Surgical Progress, 1954 (London: Butterworth. 1954. Pp. 348. 42*s*.).—British Surgical Practice keeps itself up to date by the yearly publication of a progress volume. The 1954 volume is in four sections—original articles, critical surveys, abstracts, and "noter-up." The first section is intended to remedy omissions in the original work, and the ten chapters include articles on injuries of the bile-ducts by Mr Rodney Maingot, on injuries of the urethra and bladder by Mr. D. S. Poole-Wilson, and on pelvic visceretomy by Sir Stanford Cade. An excellent chapter on the applications of electronics to clinical practice, by Mr. G. A. Hay, shows the range of knowledge which is nowadays needed by the surgeon. The critical surveys cover five subjects—antibiotics, blood-transfusion, carcinoma of the œsophagus, carcinoma of the stomach, and surgery in Korea. The abstracts are of a hundred surgical papers, presumably selected as the most important of the year's contributions to surgical knowledge. The noter-up (a functional rather than a euphonious term) shows at a glance what additions there have been to chapters in the original work, and where in the present and previous progress volumes these additions may be found. The chaff has been winnowed from the grain by the editors—Sir Ernest Rock Carling and Sir James Paterson Ross—and this book continues to be the good friend of all surgeons striving to keep abreast of their reading.

Infant Feeding and Feeding Difficulties (2nd ed. London: J. & A. Churchill. 1954. Pp. 277. 12*s*. 6*d*.).—We greeted the first appearance of this book by Dr. Philip Evans and Dr. Ronald Mac Keith as a very welcome compilation for purposes of reference. In its second edition it retains this character, and is even more comprehensive, though the authors are careful to make it clear whether they are writing with good personal knowledge of the method described or are mainly reporting the findings of others. In order not to be dogmatic they have treated at equal length several methods which are dietetically equivalent, and have not pronounced in favour of one of them, even when (on grounds other than strictly dietetic) it would have been possible to distinguish among them. This comprehensiveness and academic impartiality will appeal to the student and the junior specialist. Two changes of emphasis since the first edition are notable. On the difficult question of breast-feeding before adoption the authors, while still sitting on the fence, now face the other way—towards the bottle. Secondly, the whole exposition of artificial feeding is now based on dried milk instead of on liquid milk. As before, almost every statement of an average is accompanied by a reminder of the natural variability of infants, who in this book are valiantly defended against the rule of the thumb.

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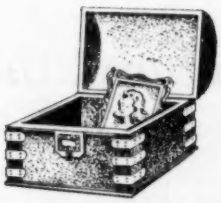

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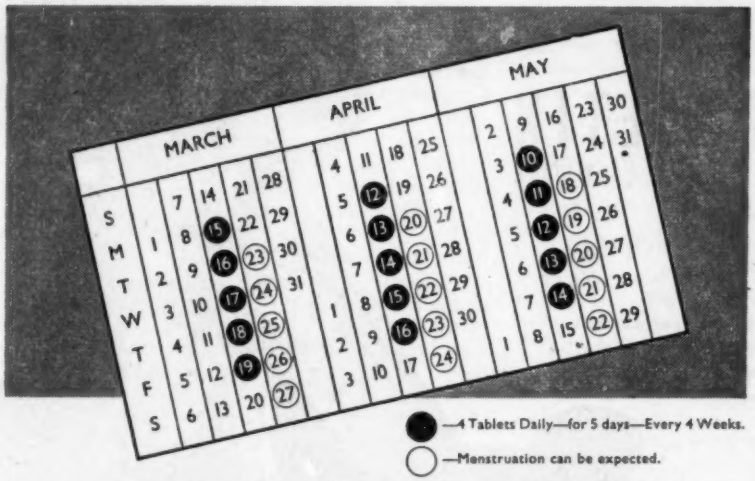

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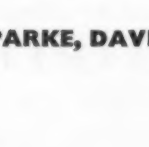

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THE LANCET
LONDON: SATURDAY, FEB. 5, 1955

Acute Respiratory Infections

THE physician who has difficulty in finding his way through the maze of undifferentiated acute upper-respiratory infections will be glad to learn that more help from the laboratory is on the way. First news of this came from two groups of workers in the U.S.A. just over a year ago. ROWE et al.,[1] at Bethesda, reported that they had isolated viruses from a large number of surgically removed adenoids; but the relation of these viruses to disease in man was then unknown. Shortly afterwards HILLEMAN and WERNER[2] described the isolation of similar agents from Army recruits with acute respiratory disease, or A.R.D.[3] (earlier known as "febrile catarrh"[4]). In the past year the Bethesda workers have ploughed a large area of this important new field, and they have unearthed some interesting findings.[5]

HUEBNER et al.[5] tried first to define this group of viruses and then to discover its relation to disease in man. Nearly two hundred strains have now been isolated from adenoids and tonsils removed at operation or from patients with acute respiratory infections; and because of common properties these viruses clearly belong to a single group. They are all epitheliotropic, causing very characteristic changes in cells growing in tissue-culture; they are not pathogenic for ordinary laboratory animals; they are resistant to other and antibiotics; and finally they share a common "soluble" antigen which is detected by complement-fixation tests. Within the group six different serotypes are distinguishable by virus-neutralisation tests in tissue-culture, and such differentiation has epidemiological significance. Forty-four strains of types 1, 2, 5, and 6 have been recovered, and with two exceptions all came from cultures of adenoids or tonsils removed at operation. The two exceptions were a type-1 strain which was recovered from the pharyngeal secretions of a child with exudative pharyngitis, and a type-5 strain which came from a laboratory technician who, while working with this agent, developed sore throat and earache without pyrexia. Types 3 and 4, on the other hand, were recovered almost exclusively from persons with upper-respiratory infections. Type-3 virus was found in a 2-year-old girl with acute febrile rhinitis, pharyngitis, and conjunctivitis, who was admitted to hospital where apparently she initiated a small outbreak.[6] Within two weeks of her admission there were seven further cases, five very similar to the first and two with mild rhinopharyngitis; and from all of these patients evidence of infection with type-3 virus was obtained. The clinical manifestations comprised fever for five or six days in six patients, pharyngitis in seven, with exudate in two; rhinitis in seven; cervical lymphadenopathy in five; and conjunctivitis in four. This seems therefore to be a distinct clinical entity. HUEBNER et al.[5] also mention outbreaks of acute catarrhal pharyngitis and conjunctivitis among students in a summer school and their household contacts; type-3 virus was found in the throat or conjunctival secretions and oral secretions of seventy-six of these patients. It seems, too, that an agent isolated by NEVA and ENDERS[7] from a child with an illness resembling roseola infantum was a type-3 virus. Type-4 virus was first isolated by HILLEMAN and WERNER[2] from three cases diagnosed as primary atypical pneumonia and two diagnosed as acute respiratory disease, during an outbreak among recruits at Fort Lennox Wood, Missouri. The association of type-4 viruses with acute respiratory disease has now been further confirmed. HUEBNER et al.[5] recovered type-4 virus from the nasopharyngeal secretions of six military recruits with febrile respiratory illnesses resembling acute respiratory disease; and DINGLE et al.[8] have studied the relation of type-4 virus to certain types of acute respiratory infections by retrospective serological methods, using sera collected by the U.S. Army Commission on Acute Respiratory Diseases during experiments on volunteers and sera from patients clinically diagnosed as having various infections of the upper respiratory tract. They found a distinct rise in antibody to type-4 virus during convalescence from acute respiratory disease and from bronchitis resembling atypical pneumonia, but not from mild or severe common cold or definite syndromes of primary atypical pneumonia. Of eighteen volunteers who some years ago were infected experimentally with acute respiratory disease,[9] fifteen have now been shown in retrospect to have had no detectable antibody to type-4 virus in their pre-inoculation sera, but antibody developed in convalescence; by contrast, of the six volunteers who did not develop symptoms after inoculation five had appreciable titres of antibody in their pre-inoculation sera. Evidently the agent used in these studies can now be identified as a type-4 virus. Studies of outbreaks of "acute respiratory disease" in three military camps suggest that in two, but not in the third, the cause may have been an agent similar to the type-4 virus.

Outbreaks of infection in semiclosed communities provide the most favourable opportunities for relating the causal organism to the effect it produces, but such outbreaks do not help to establish the epidemiological importance of the organism in the general community. HUEBNER et al.[5] rightly remark that simple association of a common virus with an illness does not signify that the one is the cause of the other. In an attempt to satisfy a modern version of KOCH's postulates, they have carried out serological surveys and transmission experiments in volunteers with these viruses. Two hundred sera from a group of patients attending clinics in three hospitals were tested against the six serotypes by a virus-neutralisation test in tissue-culture. Antibodies to types 1 and 2

1. Rowe, W. P., Huebner, R. J., Gilmore, L. K., Parrott, R. H., Ward, T. G. *Proc. Soc. exp. Biol., N.Y.* 1953, **84**, 570.
2. Hilleman, M. R., Werner, J. H. *Ibid*, 1954, **85**, 183. See leading article, *Lancet* 1954, i, 867.
3. U.S. Army Commission on Acute Respiratory Diseases. *Amer. J. publ. Hlth*, 1944, **34**, 347.
4. Stuart-Harris, C. H., Andrewes, C. H., Smith, W. *Spec. Rep. Ser. med. Res. Coun., Lond.* 1938, no. 228.
5. Huebner, R. J., Rowe, W. P., Ward, T. G., Parrott, R. H., Bell, J. A. *New Engl. J. Med.* 1954, **251**, 1077.
6. Parrott, R. H., Rowe, W. P., Huebner, R. J., Bernton, H. W., McCullough, N. B. *Ibid*, p. 1087.
7. Neva, F. A., Enders, J. F. *J. Immunol.* 1954, **72**, 315.
8. Dingle, J. H., Ginsberg, H. S., Badger, G. F., Jordan, W. S. jun., Katz, S. *Trans. Ass. Amer. Physns*, 1954, **67**, 149.
9. U.S. Army Commission on Acute Respiratory Diseases. *J. clin. Invest.* 1947, **26**, 957.

were quite prevalent in the young age-groups; over 30% of infants aged 6–11 months already had antibodies to these two types. The findings in older children accorded with the observation that most of the viruses recovered from surgically removed tonsils and adenoids of children attending the same clinics were of types 1 or 2. Antibodies to the other four types were not so common; but there was a sharp rise in the frequency of antibodies to type 4 from 25% in those aged 6–15 to 71% in those aged 16–34. This suggests that type-4 virus may have been more prevalent in that area fifteen years ago, but perhaps such a conclusion is best deferred. The volunteer studies have not yielded much further information. Infected nasopharyngeal secretions and tissue-culture fluids containing active virus were administered intranasally to adult volunteers. Few objective signs of illness resulted, although most of the volunteers showed serological evidence of active infection. No differences were noted between volunteers who had pre-existing serum-antibodies and those who had not.

The discoveries of the past year add greatly to our knowledge of this difficult subject, but they also leave many questions unanswered. In particular, there is great need for more facts about the rôle of these viruses in the host of minor respiratory illnesses encountered in general medical practice. The laboratory will soon be able to help physicians by adding the complement-fixation test with these agents to the techniques for investigating respiratory virus infections. If the suggestion of HUEBNER et al. is accepted, this group of viruses will henceforth be known by the name "adenoidal-pharyngeal-conjunctival" agents. Perhaps the best justification of this title is that it will soon be mercifully abbreviated to A.P.C.—initials which hint at a suitable treatment.

Indices of Heat Stress

IT is not easy to assess the physiological effects of work in hot conditions. The main environmental factors are the temperature, humidity, and rate of movement of the air, the amount of radiant heat, and the clothing; but equally important are the physiological factors—metabolic rate, acclimatisation, and availability of water and salt to replace losses in the sweat. Of the various methods of measuring heat stress, the only one that was at all widely used until the 1939–45 war was the two effective temperature (E.T.) scales. These scales, evolved by YAGLOGLOU et al.[1–3] in 1923, have proved of considerable value; although designed as an index of comfort, they were found also to predict the physiological state. They take into account the dry and wet bulb temperatures and the rate of air movement; but they made no allowance for radiant heat until BEDFORD [4] suggested that the globe-thermometer temperature should be used where this differed from the dry-bulb temperature.

In the late war the E.T. scales were used at first for defining tolerable conditions in ships operating "closed down" in the tropics. But the validity of the scales in severe conditions had not been fully tested, and the effects of clothing and acclimatisation were imperfectly understood. Research on these points was therefore undertaken in specially equipped climatic chambers at the National Hospital, Queen Square, where it was found that, although in general the E.T. scales measured the stress accurately, under certain circumstances they could be misleading—for instance, by underestimating the deleterious effects of still air on men working in hot humid environments.[5 6] Since it did not seem possible to modify the E.T. scale to correct these errors, MCARDLE and his colleagues [7] at Queen Square empirically constructed an alternative nomogram, based on data [5 6] obtained on acclimatised volunteer naval ratings. This nomogram was designed to predict the physiological state at the end of four hours in the given conditions, the unit of measurement being the four-hour sweat loss. The predicted four-hour sweat-rate (P_4SR) derived from the nomogram was found to correlate very well not only with the observed values for sweat loss but also with the final rectal temperatures. Since the pulse-rate varies in parallel with the rectal temperature the P_4SR does in fact give a good estimate of the physiological state as well as of the probable salt and water requirements.

Mr. F. E. SMITH [8] has now compared the accuracy of the P_4SR scale with that of the E.T. scale, submitting to detailed statistical analysis some of the data of the Queen Square workers. He divided the data into four main groups according to the work and the clothing, and compared the two indices on their ability to predict the sweat losses and the final rectal temperatures. On all counts the P_4SR scale was either superior or equal to the E.T. scale. The P_4SR scale is more practical since it allows for the amount of work and the character of the clothing and gives a rough guide to the amount of unevaporated sweat—which is important in determining the degree of discomfort. The E.T. scales measure the predicted physiological effect in terms of that temperature of still air, saturated with moisture, which would have the same effect as that of the environment under consideration. To relate an effective temperature to physiological response it is necessary to consult graphs for the particular combination of work and clothing; the curves bear a logarithmic relation to the sweat-rate and rectal temperature and are very difficult to remember. This is one of the major defects of the E.T. scales. On the other hand these scales are easier to understand than the P_4SR scale, and the calculation is quicker. Moreover the E.T. scales cover a wide range of environments from very cold to very hot, whereas the P_4SR scale is concerned only with the regions in which sweating may occur. These advantages of the E.T. scales seem to have influenced SMITH considerably; and he has devised some very simple and ingenious additions to the E.T. nomograms by which the amount of work is taken directly into

1. Houghten, F. C., Yaglogiou, C. P. *J. Amer. Soc. Heat. Vent. Engrs*, 1923, **31**, 89.
2. Houghten. F. C., Yaglogiou, C. P. *Ibid*, 1924, **30**, 193.
3. Yaglogiou, C. P. *J. industr. Hyg.* 1927, **9**, 297.
4. Bedford, T. *M.R.C. (War) Memor.* no. 17. H.M. Stationery Office, 1946.
5. Benson, R. S., Colver, T., Ladell, W. S. S., McArdle, B., Scott, J. W. Royal Naval Personnel Research Committee, Medical Research Council, report no. 45/205, 1945.
6. Dunham, W., Holling, H. E., Ladell, W. S. S., McArdle, B., Scott. J. W. Royal Naval Personnel Research Committee, Medical Research Council, report no. 46/316, 1946.
7. McArdle, B., Dunham, W., Holling, H. E., Ladell, W. S. S. Scott, J. W., Thompson, M. L., Weiner, J. S. Royal Naval Personnel Research Committee, Medical Research Council, report no. 47/391, 1947.
8. Indices of Heat Stress. By F. E. SMITH. Medical Research Council, memorandum no. 29. H.M. Stationery Office. 1955. Pp. 51. 2s.

account, though again the result is given in terms of temperature. These additions are founded on the results of the Queen Square workers, but only at two levels of metabolism; and thus the new nomogram is derived largely from intrapolated and extrapolated values. In doing this SMITH has made the questionable assumption that in all environments increase in work bears a linear relation to the resultant increase in physiological effect. Until an accurate and fully comprehensive scale can be constructed, embracing all environments and including extremes of heat and cold, it would perhaps be wiser to use the P_4SR scale, although if conditions are not severe the E.T. scales should prove reasonably satisfactory.

Body-build and Temperament

THE idea that a man's body-build is related both to his temperament and to his proneness to disease is far from new. The difficulty in testing this idea has been to devise good objective methods of recording physique. The Hippocratic division into *Homo phthisicus* and *Homo apoplecticus* was a useful first approximation. Others since then have been content, while recognising continuous variation, to make the same division between those who are relatively light for their height (leptosomes, asthenics) and those who are heavy (pachysomes, pyknics). REES and EYSENCK,[1] for example, following BURT in the use of factor analysis, found in a sample of soldiers one major factor for general body-size and another dipolar-type factor contrasting length with width and circumferential measurements. But, as is well known to boxers and wrestlers, the same height-weight ratio, even in well-trained men with little fat, may include physiques which differ widely in muscle strength and skeletal form; and a satisfactory classification must include some estimate of this variation. HAMMOND [2] has applied factor analysis to measurements of British and American children. He, too, found a general size factor and a type factor distinguishing those excelling in length from those excelling in circumferential measurements. But in addition, in boys he found a second type factor, which distinguished those who were rotund and not especially broad (excelling in circumferential measurements of fleshy parts, but with relatively small bones) from those who had a broad trunk and big bones. With a more intuitive approach SHELDON [3 4] distinguishes between three components of physique, which have much in common with HAMMOND's findings, except that SHELDON is not concerned with general size. His components are: (1) endomorphy, characterised by ready accumulation of fat, deep chest, round skull, and thick upper arm and thigh but relatively thin wrists and ankles; (2) mesomorphy, characterised by big muscles and bones, broad but not thick chest, cubical skull, and large forearms and calves in relation to upper arms and thighs; and (3) ectomorphy, characterised by linear build, narrow chest, narrow face, long thin limbs, and light bones. SHELDON types a person by giving him a score for each of the three components. This grading is objective, in that independent observers will arrive on about the same grading from measurements on a correctly taken photograph. The somatotype has been shown to remain more or less constant in adult life, though it is not yet certain whether it can be estimated accurately in childhood.

Full understanding of the constant elements in body-build will come only when the genetic factors have been determined; but this is no reason for not trying to associate temperament and disease-proneness with linearity of build or with SHELDON's somatotypes. The first more or less scientific attempts were those of KRETSCHMER, who distinguished between pyknic, athletic, asthenic, and dysplastic types. He found that the pyknic were especially liable to have a cyclothymic personality and to develop manic-depressive psychosis; whereas asthenics were especially prone to schizophrenia. While some psychiatrists have confirmed his findings, others have not—partly, no doubt, because his assessment of physique was too subjective. REES [5] related the score in his second factor—that of linear or stocky build—to neuroticism in soldiers and found that hysterics tended to be stocky, and obsessionals and those with anxiety states to be linear. SHELDON [6] has related his three components of physique to three components of temperament—viscerotonia, somatotonia, cerebrotonia—which are associated with endomorphy, mesomorphy, and ectomorphy respectively. Viscerotonia is characterised by qualities which include complacency, love of comfort, enjoyment of food, need of affection, and sociability; somatotonia is characterised by assertiveness, pleasure in bodily action, and insensitivity to pain; cerebrotonia is characterised by restraint, self-consciousness, sensitivity, and love of solitude. Gradings for these qualities of temperament are not as objective as the gradings for physique; but common observation suggests that the associations are real ones, and as objective tests become available it will be interesting to see how they correlate with physique. Only preliminary reports have so far appeared on the association of somatotype with mental and physical disease. For example, GERTLER et al.[7] have shown that those who develop early coronary-artery disease are usually endomorphic mesomorphs.

An interesting sidelight on associations of physique with temperament has come from the work of TANNER [8] and PARNELL [9] in this country on the relation of somatotype to choice of career. It is natural that choice of sport should be related to physique; no-one who is not high in mesomorphy could hope to excel at rugby football, while Channel swimmers usually have a considerable endowment in endomorphy as well as in mesomorphy. But the association of somatotype with occupation is presumably mostly through temperament. In the U.S.A. GARN and GERTLER [10] showed that workers on the floor of the factory tended to be lower in ectomorphy and higher in the other two gradings than those in the research departments. This was not a social class or educational difference, since the men on the managerial side of the factory differed even more

1. Rees, W. L., Eysenck, H. J. *J. ment. Sci.* 1945, **91**, 8.
2. Hammond, W. H. *Hum. Biol.* 1953, **25**, 65.
3. Sheldon, W. H., Stevens, S. S., Tucker, W. B. The Varieties of Human Physique. New York, 1940.
4. See Tanner, J. M. *Lancet*, 1951, i, 574.
5. Rees, W. L. *Eugen. Rev.* 1947, **39**, 51.
6. Sheldon, W. H., Stevens, S. S. The Varieties of Temperament. New York, 1942.
7. Gertler, M., Garn, S., White, P. *J. Amer. med. Ass.* 1951, **147**, 621.
8. Tanner, J. M. *Eugen. Rev.* 1954, **46**, 149.
9. Parnell, R. W. *Brit. med. J.* 1953, ii, 472.
10. Garn, S. M., Gertler, M. M. *Amer. J. Phys. Anthrop.* 1950, **8**, 387.

from the research group in their relative lack of ectomorphy. In this country TANNER [8] has shown that officer-cadets at Sandhurst are on the average more mesomorphic and endomorphic than undergraduates at Oxford, while preclinical students at a London hospital were intermediate between the Sandhurst and Oxford groups. PARNELL [9] has found that at Oxford medical students are more mesomorphic than the remainder, and that at Birmingham dental and engineering students are more mesomorphic than students of physics and chemistry. Moreover, the whole distribution of somatotypes at Oxford is more central than at American universities studied by SHELDON. The extreme mesomorphs and the extreme ectomorphic endomorphs were absent from the Oxford group, and there is a relative shortage among them of extreme ectomorphs. These studies relate somatotypes to choice of, and selection for, career; but association with success in career is of greater practical importance. As a first step PARNELL [11] has attempted to relate the somatotypes of Oxford students to the type of degree they achieve in the final honours examinations. His numbers are small but suggest real differences. Notably there is a tendency for those predominating in mesomorphy to get their fair share of first-class honours and relatively few thirds; the great majority achieve seconds. Understandably this group were also found to have made the biggest contribution to university sport. The highest proportion of firsts came from near-central endomorphic ectomorphs. These interesting findings need confirmation and further analysis; one possible source of confusion is that firsts may be awarded more generously in some subjects than others. There is no reason to suggest that physique is in any way related to intelligence, and so somatotype is related to academic success probably through temperament. Perhaps the highly intelligent among extreme ectomorphic endomorphs have insufficient energy to get to the university; while intelligent extreme mesomorphs may prefer to get their powerful grip on adult life early without wasting time on non-vocational education. Perhaps, too, moderately high mesomorphs, if they get to the university, have sufficient drive at least to achieve a second, but may be too restless to get a first.

The basis of these probable, though not fully proven, relationships between physique, temperament, and proneness to disease is uncertain. Much of the association may be basically genetic and due to the multiple effects of single genes.

11. Parnell, R. W. *Brit. med. J.* 1954, ii, 491.

Annotations

MALARIA IN THE AMERICAS

THE inception of a five-year campaign to eradicate malaria from the entire American continent has been announced by the Pan-American Sanitary Bureau, a subsidiary of the World Health Organisation. The extent of the undertaking can be judged from the fact that 135 million people in the Americas live in potentially malarious areas—60 million in regions where the disease has been suppressed, 45 million in "protected" zones, and 30 million in unprotected areas. The aim is to extend control to all the malarious regions, and to intensify it to the point where transmission ceases. If transmission can be prevented for a few years gametocytes of *Plasmodium falciparum* or *P. vivax* will not recur and the disease will disappear.

Twenty years ago such a scheme would have been fantastic. But the residual insecticides have made possible very large and successful antimalarial campaigns—for example, in the Mediterranean, in the U.S.A., and in Ceylon. The highest levels of control have been achieved in the more temperate climates, where both the plasmodium and the anopheles are seasonally checked by cold. Much of the American territory already conquered falls into this category; whereas it is not unlikely that the areas at present "unprotected" from malaria are tropical, undeveloped, and largely inaccessible. Furthermore, recent events in Central American States suggest that political unrest may hamper international operations.

In most previous campaigns there has been only one main vector to attack. But in the vast American territory many different anophelines predominate in different regions (e.g., *A. freeborni*, *A. quadrimaculatus*, *A. albimanus*, *A. darlingi*, *A.* (*K*) *bellator*, and *A. pseudopunctipennis*). The problem of suppressing transmission is different with each of these mosquitoes. Their very diverse breeding-habits are probably unimportant, for it is almost certain that they will be attacked in the adult stage by residual insecticides. The most important characters of the insects are: (*a*) their "domesticity" (i.e., whether they bite man in or near houses and will rest on treated walls); (*b*) their sensitivity to the insecticide; and (*c*) the possibility of their developing insecticide-resistant strains. Resistance to insecticides is a serious hazard for which we must remain alert. In Greece, insecticides gave perfectly satisfactory results for several years; but last year malaria was transmitted in 144 villages owing to resistant strains of *A. sacharovi*.

Malaria eradication, though not so difficult as mosquito eradication, demands much more effort than malaria control. An attempt at complete suppression throughout such a vast area as North and South America will call for all the optimism and drive traditionally associated with the New World.

INTESTINAL OBSTRUCTION IN THE NEWBORN

AIR is the most useful contrast-medium for the diagnosis of intestinal obstruction in the newborn infant. It is ingested with the first breath and passes rapidly from the stomach into the small and large bowel. Podolsky and Jester [1] have reinvestigated the rate of passage of air in a series of normal and premature babies and, as might be expected, they found considerable variations. Within the first two hours all the babies had air in the small bowel, and in 50% it had already passed into the cæcum or ascending colons. By six hours the transverse and descending colon were filled; but the filling of the sigmoid and rectum was inconstant; air showed in the sigmoid in 82% at six hours but in only 25% at eight hours. Podolsky and Jester concluded, reasonably enough, that flatus must have been passed per rectum, for air reaccumulated over the next few hours. In premature babies the air tended to progress more rapidly; one infant weighing 4 lb. 8 oz. had air in the rectum two hours and thirty-five minutes after birth.

The value of a plain radiograph of the abdomen in localising intestinal obstruction will therefore depend largely on the time at which it is taken. Duodenal and high-intestinal obstruction may be recognised within a few hours after birth, whereas obstruction lower down the alimentary tract may not be apparent until at least five or six hours after birth. Podolsky and Jester remark on the importance of lateral films, particularly for recognising the rectum and sigmoid, since loops of ileum often

1. Podolsky, M. L., Jester, A. W. *J. Pediat.* 1954, 45, 633.

lie below the pelvic brim and on an anteroposterior film may be mistaken for the lower bowel. The distribution of gas in the intestine is not the only diagnostic feature; for the presence of an obstruction will lead not only to failure of passage of air but also to gaseous distension of the bowel, and this gives rise to characteristic appearances such as the gross distension of the stomach and first part of the duodenum in duodenal atresia. Radiographs must always be taken with the infant upright, except in rectal atresia when the patient must be inverted and a metallic object placed in the perineum so that the gap between the gas-filled lower bowel and the skin may be estimated. Barium by mouth has no place in the investigation of the newborn infant, and it may be dangerous if there is vomiting. But a barium enema is essential for the diagnosis of low-intestinal obstruction due to Hirschsprung's disease, for there is no other method of recognising the typical narrow segment.[2]

Surgery of the newborn infant has advanced strikingly in the past decade, and more accurate diagnosis of intestinal obstruction by radiography has played no little part in this progress.

DIETARY SODIUM RESTRICTION

In the U.S.A. the value and dangers of dietary sodium restriction have been concisely and authoritatively summarised in excerpts from a report prepared by a small committee for the Food and Nutrition Board of the National Research Council and the Council on Foods and Nutrition. The first excerpt [3] deals with the physiology of sodium, and the normal response to sodium restriction. The second [4] shows how the indications for sodium restriction have been extended since, in 1901, Achard and Loeper [5] first appreciated the connection between salt intake and the formation of œdema in cardiac failure. In addition to cardiac failure, the conditions in which sodium restriction may be of value are now held to include hypertension, renal disease, cirrhosis of the liver, toxæmia of pregnancy, and Ménière's disease. The report is moderately enthusiastic about restriction of sodium in cardiac œdema, œdema relating to cirrhosis, and toxæmia of pregnancy. The verdict on the value of restriction in hypertension and Ménière's disease is "not proven"—and this carries the stigma which in fact, if not in theory, goes with such a verdict. The dangers of sodium restriction as a general treatment for renal disease are emphasised, in relation to the possibility of "salt-losing nephritis," and the appearance of a low-salt syndrome, with dehydration and a precocious increase in the blood-urea level. The report points out once again that in the treatment of œdema the restriction of sodium must be rigorous, with a daily intake not exceeding 500 mg. This requires a considerable effort by the doctor or dietitian in planning the diet, and a greater effort by the patient in consuming it; the labours of both (in America) should be lightened by the requirement of the Food and Drug Administration that foods in such a diet shall be labelled with their sodium content per 100 g. and per serving; and apparently such foods may be had in variety.

Unfortunately painstaking adherence to such a diet may fail to achieve its objective, and may even lay the patient open to hazards,[6] including inadequate general nutrition and vitamin deficiencies; and a greater range of low-sodium foods and the administration of vitamin supplements are recommended. The "sodium-depletion syndrome" may appear, especially when a low-sodium diet is conjoined with mercurial diuretics, or when climate or central heating provoke significant sodium loss in the sweat; and the report recommends that the serum-sodium level should be checked weekly or even more often. Loss of responsiveness to mercurials, and dehydration with a rising blood-urea level, may also be due to excessive sodium restriction.

On this side of the Atlantic we are generally less rigorous in demanding sodium restriction. We try to atone for our shortcomings with mercurial diuretics, or with cation-exchange resins to bind some of the dietary sodium after it has fulfilled its office of seasoning our food. But occasional patients derive psychological strength from a strict regimen, and it is perhaps in them that we should look more closely for the harmful side-effects less latent in a low-sodium diet.

ANAEROBIC COCCI

Anaerobic cocci are common commensals of man, but they are all sensitive to penicillin and so are not of great pathological significance today. Formerly, the anaerobe *Streptococcus putridus* was recognised as an important cause of a dangerous kind of puerperal infection. This organism and closely related strains still comprise the commonest group found in puerperal pyrexia, and they are probably the cause of other forms of suppuration—for example, anaerobic streptococcal myositis. In the days before penicillin reduced the pathological significance of the anaerobic cocci, these organisms were in a sense "unpopular" with bacteriologists. Partly this was because in many laboratories methods for isolating anaerobes in pure culture were not part of the routine, and partly because critical study often disclosed that cultures of cocci thought to be obligate anaerobes were only facultative anaerobes. But perhaps the chief reason why the anaerobic cocci were not welcomed as objects for study and identification was that their taxonomy was chaotic: the most widely accepted scheme of classification comprised eight genera with thirty-two species and several subspecies. Many of the species were so poorly described that their names could not be justified, and some of the criteria for differentiation of species were so questionable that the whole picture appeared confused in any light. Still worse, the biological characters of a single strain were liable to change unpredictably between one laboratory and another and even within a single laboratory between one batch of medium and another.

Bacteriologists owe a debt of gratitude to Prof. Ronald Hare and his colleagues,[1–3] who have done much not only to bring order into the taxonomy of the anaerobic cocci, both gram-positive and gram-negative, but also to explain the reasons for some of the variability in the fermentation and other reactions of these organisms. It now appears that the exact composition of the medium and choice of test substrate is very important: sulphur compounds are required for gas formation by some strains; fatty acids must be present in the medium to allow other strains to show fermentative activity; and still other strains can attack organic acids but not carbohydrates. With media containing peptone, agar, or digest broth, enough of some of these substances may be present as impurities in some batches and absent from other batches to account for the hitherto mysterious variability in the reactions of the anaerobic cocci.

By methods and in media which they fully describe, Hare et al. have examined 233 strains of anaerobic cocci. Of these, 141 were commensals isolated from healthy people—from such situations as the nasopharynx, mouth, skin, intestine, and vagina. The remaining 92 strains came from material aspirated at bronchoscopy (10 strains), abscesses in lungs removed at operation (3 strains), sputum from cases of chronic lung infection (10 strains), the genital tract of cases of puerperal pyrexia (60 strains),

2. Bodian, M., Stephens, F. D., Ward, B. C. H. *Lancet*, **1949**, i, 6.
3. *J. Amer. med. Ass.* 1954, **156**, 1081.
4. *Ibid*, p. 1171.
5. Achard, C., Loeper, M. *C.R. Soc. Biol. Paris*, 1901, **53**, 346.
6. *J. Amer. med. Ass.* 1954, **156**, 1252.

1. Hare, R., Wildy, P., Billett, F. S., Twort, D. N. *J. Hyg., Camb.* 1952, **50**, 295.
2. Wildy, P., Hare, R. *J. gen. Microbiol.* 1953, **9**, 216.
3. Thomas, C. G. A., Hare, R. *J. clin. Path.* 1954, **7**, 300.

and other forms of infection (9 strains). Of the 233 strains all but 27 were classified in one of nine groups based on the fermentation of five carbohydrates and five organic acids. From the results of this work it is now evident that each area of the human body tends to possess a rather restricted number of groups of anaerobic cocci. The strains of group 1, which correspond to the species named *Streptococcus putridus* (Schottmüller), seem to have more certain claims to pathogenicity than those of groups 2–9. But most of these strains will ferment carbohydrates or organic acids such as pyruvate; as a result they may so increase acidity as to impair the antibacterial efficiency of local defensive mechanisms. In this way the anaerobic cocci might promote infection with other organisms present in the same situation, and so might be more important than is generally supposed.

PROTECTION AGAINST IONISING RADIATION

THE injuries from ionising radiation can be classified into two groups—deep and superficial. Of the deep injuries damage to reproductive organs and blood-forming tissues are particularly important. Experimentally malignant tumours have been produced, and in radium and X-ray workers the incidence of leukæmia is significantly higher than in other medical workers and the general population. Superficial injury most commonly involves the hands; and the lesions have included epilation, telangiectasis, necrosis, and carcinoma.

In his presidential address to the section of radiology of the Royal Society of Medicine, Dr. J. F. Bromley [1] described some of the ways by which, in the absence of simple precautions, a considerable radiation risk can arise in routine hospital practice. He recalled an investigation some years ago in a gynæcological ward, in one corner of which were grouped "for convenience of nursing" seven patients undergoing radium treatment. Films hung at intervals along the walls of this ward recorded, over five days, dosages ranging from 0·1 to 3·0 rœntgen units; the total radiation to which the nurses were exposed must therefore have been dangerously high. He pointed out that unnecessary exposure of nurses to high doses may take place during "back rounds," or as a result of over-solicitous attention to patients with implanted radium during recovery from an anæsthetic. To obviate these and similar risks, he said, all procedures that had to be carried out near these patients should be executed as speedily as possible; and hospital matrons must be fully aware of the importance of keeping the numbers of nurses engaged on "radium duties" up to establishment.

Effective screening of those at risk is seldom possible. Formerly it was accepted that a worker could safely receive up to 1r per week; but in 1950 the International Commission of Radiological Protection put the "tolerance" dose at 0·3r per week, measured in air, for whole-body radiation, and at 1·5r per week for the hands and forearms.

To check that the tolerance dose is not being exceeded specially prepared films or small pocket ionisation chambers, measuring dosages as small as 5–10 milli-rœntgens, can be carried, and it has been usual to do routine three-monthly blood-counts. Various workers have shown gross correlation between blood changes and definite over-exposure [2–5] Mole [6] has now made a critical survey, in an effort to determine the value of blood-counts in defining damage to the blood-forming organs before irreparable harm has been done. The possible changes in the blood-count might fall into three groups:

(1) A decrease in the count without continuing decline, where the blood-forming tissues are not irreparably damaged.

(2) A sudden terminal fall, where repair has kept up with destruction until the ability to repair is exhausted.

(3) A gradual fall, assuming that the ability to repair diminishes with extension of marrow damage.

In practice it appears that the changes observed are of one of the first two types; which suggests that periodic blood-counts can be of only limited value. Lorenz et al.[7] irradiated some guineapigs at eighty times and others at twenty times the normal tolerance dose In the former group the white blood-cell count fell by 50%, but in the latter by only 20%; and in neither group was there progressive decrease in cell-counts to indicate increasing marrow damage. Yet at the end of two years the death-rate among the guineapigs which had received the lower dose was twice that of controls. Apparently lymphopenia is at least as common a sign of damage as neutropenia; but even with gross damage neither may be present, and in one case of aplastic anæmia due to radiation the white blood-cell count was 4700 per c.mm. on the day of death. In any one person the white blood-cell count may vary considerably, and it takes time to establish a personal base-line. Furthermore Mole questions whether variation in the number of white cells in the peripheral blood is related to the extent of the underlying marrow damage, and he suggests that any changes in the white blood-cell counts of radium and X-ray workers are more likely to be due to factors other than radiation. The white blood-cell count, he concludes, cannot be relied on to give clear warning of serious damage.

SKIN TESTS IN ASTHMA

ASTHMA is notoriously difficult to treat, and the results of treatment are hard to assess: hence the multiplicity of remedies, and of opinions on their value. Skin-testing followed by desensitisation may seem rational as well as simple; but this method rests on two questionable assumptions: (1) that attacks are caused by contact with allergens, and (2) that skin-tests can indicate which allergen is responsible. While the former assumption may be correct in certain patients, the latter is still unproved.

Herxheimer et al.[8] have investigated the skin reactions in 300 patients with allergy affecting the respiratory system, and 100 normal people. More than half the patients had asthma, and the remainder perennial rhinitis or hay-fever. The "prick" test was done with twelve extracts of allergens. One or more of the allergens gave a positive reaction in 95% of the patients, but also in 50% of the controls. In 21 patients the tests were repeated on different days, and the results were consistent in only 3; in the rest variations were considerable. 51 patients were judged to be definitely sensitive to one or more specific allergens; but in 6 the skin did not react to the incriminated allergen, and in each of the remaining 45 at least one skin reaction did not correspond with the clinical evidence. Herxheimer et al. conclude that skin-testing cannot be relied on to reveal a causal allergen. They suggest that it should be used in only two circumstances: (1) where symptoms are thought to be due to non-allergic causes and a completely negative result would give helpful confirmation; and (2) where in a suspected allergic disorder there is no other evidence of specific allergy. In this second type of case positive results may help in selecting substances for direct testing of the bronchial or nasal reactions, though, as Herxheimer et al. point out, the respiratory mucosa and the skin do not always react to the same allergen. This work suggests that skin-testing is of scarcely any value in these common respiratory disorders.

1. Bromley, J. F. *Proc. R. Soc. Med.* 1955, **48**, 45.
2. Goodfellow, D. *Brit. J. Radiol.* 1935, **8**, 669, 752.
3. Helde, M. *Acta Radiol., Stockh.* 1946, **27**, 308.
4. Nordenston, N. G. *Ibid*, p. 416.
5. Knowlton, N. P. U.S. Atomic Energy Commission Report, AECU–397.
6. Mole, R. H. *J. clin. Path.* 1954, **7**, 267.
7. Lorenz, E., Eschenbrenner, A. B., Heston, W. E., Uphoff, D. *J. nat. Cancer Inst.* 1951, **11**, 947.
8. Herxheimer, H., McInroy, P., Sutton, K. H., Utidjian, H. L., Utidjian, H. M. D. *Acta allerg. Kbh.* 1954, **7**, 380.

Special Articles

THE PREDICAMENT OF THE FAMILY IN THE MODERN WORLD *

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MORE than twenty years ago Ogburn [1] in the U.S.A. showed that the rapid alteration in social and technological conditions had profoundly affected the economics, leisure, and even the personal aspects of family life. But, though the family is everywhere exposed to change and to encroachment by other institutions (e.g., the State), it still remains the social atom—the irreducible unit of social organisation. Why? Because the human infant, even more than any other living creature, is endowed with the biological need for the intimate experience of loving, protective mothering. Hence the human mother, as indeed many animal mothers, requires the security of being herself satisfied and cared for in order to answer this need in the infant. For this bio-psychological function of the conjugal family there is no adequate substitute. All societies safeguard it by marriage customs. The preservation and adaptation to changing conditions of this universal institution is the prime consideration of all of us concerned with mental and communal health.

FAMILY TENSIONS AND MENTAL HEALTH

Modern psychological discovery has demonstrated, in convincing fashion, that for the human child other human beings, especially the mother, are the most important factor in the environment; and there can no longer be much doubt that, broadly speaking, healthy human development is founded on an infancy spent in a complete, stable, loving family. The reverse side of the picture—psychopathy and neurosis in deprived children—is even more fully documented, and we are all becoming aware of the links between unhealthy emotional conditions in people's childhood and their later psychological and autonomic-nervous disturbances. Psychopathology and unhappy parent-child relations are, in a sense, inseparable.

From intensive personal studies of a large number of cases of marriage failure, I can confirm that there is a significant relation between an unhappy family background of the spouses and their incapacity for a good marriage relationship.[2] This is also found in Slater and Woodhead's study of London working-class marriages in neurotic and non-neurotic samples.[3] The crucial factor seems to be not a physical break, by death, &c., in their childhood home, but rather the images and memories of *parental unhappiness*. These images and memories may cause tension in the minds even of people who show adequate adaptation in all other spheres of life. Marriage, being a most special and intimate human relationship, brings to light neurotic faults and distortions of personality which can remain undiscovered in other, less searching situations—even in war experience.

The psychic processes which interfere with good marital relations appear to me to stem from disappointment in expectation of how the marriage partner should play his or her sexual marital rôle. I find that people, who are destined to fail in marriage, love and marry not a real person but a more or less distorted image of inner fantasies projected into the partner. The projected image may represent repressed aspects of the subject's own personality, or, more frequently, the residues of still potent internalised parent figures. Unhappiness and recriminative behaviour, in open or concealed form, break surface because the partner does not answer the secret wish for a parent-surrogate. Intimate contact reveals the lack of capacity for dealing with the real partner in a mature and tolerantly loving way, and demonstrates the immaturity or crippling of the emotions which have developed only to the level of the ambivalent, demanding (because deprived) child. Once there develops this neurotic attitude towards the marriage tie, it tends to invade other spheres of life of the individual: parenthood, work, and capacity for enjoyment. Escape patterns and neurotic defences are mobilised in all the familiar forms.

Even if they attempt it, the disturbed couple can rarely conceal their tension and hostility from each other, or from their children. Children internalise, in love or in fear and anger, what they see and feel about their parents, just as the parents had internalised the unhappy, angry, forbidding images of *their* parents. In this way the deprived child is likely to become an unsuccessful marriage partner in his turn. Thus an increase in the incidence of marital breakdown in a community will directly swell the numbers of conflict-torn, insecure children, who have not learnt to identify with "good parents." Because they have not done so they will be unable to give out secure affection in adult life as fully as they should, in their marriages or in the wider sphere of social obligations. I need not labour the danger to society if this were allowed to go on unchecked. It would be ironical if we were to see an advance in physical well-being (due to our efforts at public education and hygiene) go hand-in-hand with a disintegration of social and personal relationships—i.e., of mental health.

My experience based on the observation of guilt feelings in unhappy marriage partners, and of their attempts to improve their relationships and to protect their children from the effects of their conflicts, leads me to think that deep down most of mankind cherishes the values of marriage and of the happy, secure family as perhaps the greatest and most natural source of a sense of satisfaction and personal worth. We have to seek the causes of the disturbed or broken marriage in the development of their personalities *under given social conditions*.

THE MODERN FAMILY

A generation ago we might have been moved to say that we needed an army of psycho-analysts to help these unhappy people by individual therapy—both of parents and children. That they need help and treatment remains just as true today; but we have now begun to broaden our concepts of mental ill health to include not only personal but also social ætiology. I propose to offer some ideas on the possible connection of the disquieting phenomena of increasing marital instability and divorce in Western societies with the rapid changes in our communities. We know that there were marital unhappiness, parental neglect, crime, mental disease, and brutality in every epoch of history. Our concern and our awareness of it in our era are due to the development of the psychological and social sciences which have made us think of these matters as coming within the realm of research, treatment, and prevention—just as the development of general medicine and hygiene have made us think of epidemics and of surgical catastrophes no longer in terms of inevitable calamities but of controllable events. Our thinking may be still tentative because our knowledge is limited. It is important that we here affirm

* The substance of a paper given, in the technical section for Community Organisation for Mental Health, at the Fifth International Congress for Mental Health, August, 1954, in Toronto, Canada.

1. Ogburn, W. F. *In* vol. II of Recent Social Trends in U.S.A. New York, 1934.
2. Dicks, H. V. Experiences with Marital Tensions in the Psychological Clinic. *Brit. J. med. Psychol.* 1953, **26**, 181.
3. Slater, E., Woodhead, M. Patterns of Marriage. London, 1951.

the similarity in principle with general hygiene. And we know enough to propose action with modest confidence in some areas.

In traditional societies such as are still the rule in many parts of the world, as they once were in Western Europe, the family or kinship group conferred economic autonomy, division of labour, and human security and companionship. Its functions were an integrate of economic, cultural, and personal coöperation as an aid to survival. This large primary group shared values, and religious and leisure life. The rôles, duties, and obligations of each kind of member were clearly defined by custom and taboo. Thus such a family was not only a rich and meaningful milieu: it was also often the *only* milieu—school, workplace, and transmitter of the cultural heritage from generation to generation. Because of the variety of figures who composed the group, it was possible for each member to spread his loves, hates, and many other emotions between parents, grandparents, uncles, aunts, cousins, and siblings, yet within prescribed limits. It was a narrow but a safe world—each knew his place and status.

The modern urban family with few children, which social mobility has now made typical of our Western society, is a much shrunken successor to this traditional kinship group. It has developed rather quickly—over only a hundred years or so—and thus it shows many contradictory or conflicting stresses within it. Technology with its demands and opportunities has imposed its values on such a family. The children are expected to surpass the parents in education and skills, and often to found their own families far removed in physical and in social space from the parent generation. The development of dormitory suburbs around the new industries, &c., into which newcomers settle, or into which families move as part of "slum clearance" schemes, has produced a degree of social isolation or atomisation, where each little family may remain, and often feels like, an island amid a "sea of strangers." Social mobility and rootlessness may drive many young men and women who have grown up in such a milieu to marry each other from no deeper motive than loneliness. This is the social aspect of the marriage in search of parent substitutes. The monotony of industrial working life and the lack of wider social relations now drive the couple and their too few children to expect most emotional satisfactions from each other—with the consequent exaggeration of emotional demands. The marriage is expected by the partners to supply them with all the relational security previously spread over a wider and varied kinship group several generations deep. The intensity of feeling is passed on to the over-valued children who are having to work out their developmental emotional conflicts within this limited "psychological space." Moreover, urban life, with its real dangers, and its cramped living conditions for the majority, makes a small child's adventures into independence a matter of anxiety, and often a cause both for over-protection [4] and for resentment by the parents, who would like to feel free to indulge their unsatisfied cravings for the "good life" among the attractions of the city.

For the fortunate minority, life in big cities does indeed offer opportunities for wide and varied experience and social relations. This minority perhaps attains in our civilisation a breadth and a universalism undreamt of in former days. This limitlessness of development is in theory open to all, and justifies the loss of the old securities. But it can be achieved only if emotional background at family level, coupled with good abilities, has adequately equipped the personality for metropolitan life. As yet there is fear of freedom, and (as we know) even escape from freedom, because freedom means personal responsibility. Such is the contradictoriness of the present urban family pattern. Technological society demands personnel trained to independence and self-reliance. The family, in its isolation from meaningful outside contacts, still asks from its children the older virtues of dependence; it clings to the children because the parents live vicariously through the children, and neither generation has other kin to fall back on. The values which the parents' parents hold are often not those of the children.

This process is not perhaps so clearly seen in older, long urbanised communities who have developed adaptations to this way of life—such as in Viennese, Parisians, or Londoners. It is very marked in new communities (if such they can be called), where the housewife especially is driven into conflict owing to loneliness, with a husband at the factory all day and in no mood to share her domestic burdens when he comes home. She resents her narrow child-dominated life, and is unconsciously ambivalent towards her social rôle. The children interfere with what little pleasure she and the husband may have had before their arrival. She may take out her resentment on the children and on the husband, and both partners begin to long for escape. No traditional ties or sanctions, but only inner loyalty and personal responsibility are there to help stabilise them.[5] Moreover, the new society has introduced a conflict of sex rôles into the lives of married women, because it offers equalities of opportunity as workers and competitors with men.

It is the experience of medical practitioners in England that in secure, old-type rural communities neurosis is much less common than in dormitory suburbs. Thus F. A. Bevan [6] has stated that in his practice—three-quarters rural, a quarter industrial settlement—nearly all the problem children, the marital difficulties, and the neuroses come from the industrial families.

Modern child psychiatry has long recognised that stress in a family cannot be compartmentalised. We know that the whole unit is involved, even though only one member may present himself as a patient. The child is brought because it steals or cannot do its lessons, but this is only the symptom. Behind it we often find a mother incapable of responding to her child's needs because she resents the tie of husband and child, or the husband responds by unfaithfulness or alcoholism. The variants are infinite, and well known to physicians and lawyers. The weight of symptoms does not always fall on the most pathological personality among the family. The person who acts out his aggression does not feel as ill as the victims.

Obviously, I have generalised from a condensation of clinical experience. There are many happy, well-adapted urban families. We have to find out what keeps them so. But there is also much concealed family tension and suffering. Only some of it bursts into the open in overt psychiatric form. Family doctors, dermatologists, industrial medical officers, gynæcologists, magistrates and divorce court judges, pharmacists, clergy, teachers, and saloon barmen see different and earlier aspects of it. There is no doubt in my mind that the rather abrupt change in kinship structure and emotional "belongingness" which the Industrial Revolution and its consequent social mobility and urbanisation have brought about, accounts for a great deal of the malaise in family life—not to speak of the destructiveness of modern wars, which themselves reflected the discontents of modern

4. Overprotection on the part of ambivalently anxious parents is psychologically also a "deprivation"—of the child's normal need to assert its independence.

5. We may compare the change from traditional to personal moral sanctions to the biological processes of losing an exoskeleton and developing an endoskeleton.

6. Bevan, F. A. Contribution to discussion on Family Tensions and the General Practitioner. British Medical Association annual meeting, Cardiff, 1953. Unpublished.

man. Talcott Parsons [7] has pointed out the nature of this conflictful kinship situation for the American nation.

THE COUNTRIES OF RAPID CHANGE

When we reflect that the stresses and strains centred in the family are great and potentially destructive in Western societies, what can be the prognosis for those hitherto "undeveloped" communities which, almost overnight, have begun to industrialise and to attract great numbers away from the land, from kinship systems and culture patterns much more compelling and less individualistic? After all, Western culture has developed slowly and—at least since the break-up of the feudal system—has emphasised the conjugal family as the unit of social structure. Under the authority of Christian scripture it has been accustomed to regard the free partnership of husband-wife, father-mother rôles as the core of emotional security.

What will happen in the minds and feelings of scores of thousands in India, China, or Africa, now pouring out from their villages into new industrial towns? How will they make sudden breaks with their different culture patterns of marriage, oriented around different values and kinship systems?

In these new centres of industrial change we shall need quite explicit agencies of mental hygiene and welfare, just as urgently as, in the cities now rapidly enlarging to receive this flow of—yes—displaced persons, we shall need other public-health installations, such as drains and water-filters and inoculation stations.

I am not competent to speak in detail of the effects of technological change on non-European societies; but, in principle, it would seem that wherever modern industry and urban settlement appear, there old kinship systems break up and the small conjugal family becomes the effective unit for the security and emotional satisfactions of its members, parents and children. We know what stresses it is subject to. It therefore becomes the focus point for mental hygiene. We are likely to see repeated there the same phenomena as have accompanied the emancipation of women through industrial work in Europe, and the same relative diminution in assured male predominance. These will be due to the intensification of conflicts and doubts in the playing of the sex rôle as between traditional internalised parental standards and the pressures of present reality. The first generation may not be so badly off, but the full impact may well fall on their children.

Any social and economic policies which ignore or contravene the optimal transition from the traditional to the actual kinship situation will increase this conflict of old and new values and pressures, and lead to widespread marital catastrophes, broken homes, and derelict children without stable values and without safe good objects to identify themselves with.

It is perhaps already too late in many areas to avoid damage, just as in the Soviet Union rapid forced industrialisation with its concomitant deliberate loosening of family ties led to the tragic phenomenon of the *besprizornye* children in the early years of the régime, compelling the authorities to a complete turnabout in defence of the "old fashioned" family mores.

ACTION?

There are in my opinion two levels of possible action.

Long-term

This is politico-social planning for the creation in the new urban communities of effective (if at first artificial) substitutes for the kinship group—to make the factory and the settlement round it a friendly good neighbourhood, in which from the start the working families can feel supported, and have a plot of garden to cultivate, to prevent rootlessness and *Lumpenproletariat*-deterioration[8]; with facilities for adult education in skills in the new living, including parentcraft. All the social sciences—psychiatry, psychology, anthropology, sociology, and economics—must be brought to bear on solving the problems of each such new centre in terms consonant with the history and traditional culture pattern of the people as a whole. But this is not enough. The goal cannot be the creation of shepherded, supervised, and "welfare-minded" communities. That is only for the period of acute dislocation and readaptation. We surely want communities so structured as to be secure and mature enough to progress towards self-management and democratic responsibility.

Furthermore—and this applies to Western as well as to new communities—we need to work out a consistent policy, based on mental-health values, in regard to families. Our clinical insight tells us that young children must have safe and continual mothering. But our fiscal and economic trends, as well as the emancipatory revolt of urbanised women, pull the young mother away from her maternal rôle. The State tends to supplant the parents as the providers of goods and services to the children. At what point and in what cases do we intend to say that the break-up of the multi-generational family makes for personality development and is good, and where does this break-up become malign because it prevents the assimilation of good, devoted, security-giving parent figures by the children? Such optimal points between care and independence need to be worked out for each community.

Short-term

We shall have to act in several ways, and quickly. The 1948 International Congress for Mental Health adopted a statement which described three phases in the development of mental-hygiene action.[9]

The first consists in segregation and custody of the severest forms of lunacy and idiocy, with psychiatric thought confined to the descriptive, Linnæan level. Many communities have a bare sufficiency of services even in this respect.

The second developed after the first world war in some Western countries, and concerned itself with therapy—including that of neurosis. Early-treatment centres and outpatient work in a broadly psycho-analytic spirit appeared. This work gave impetus to research and thought on the ætiological level, which was also fed back into improved provision of therapy and teaching in mental hospitals. Such provision for treatment must be made—not necessarily in slavish imitation of what has been done in Western countries. It will give us research and teaching centres as well as treatment facilities. It will be a demonstration of what help can be given and on what theoretical concepts mental-health action is based.

But the focus of effort should be directed to the third phase—the sending of this trained personnel into the public-health services *in the community*, in family and child clinics, in mothercraft training, in industrial welfare, and so forth. When the usual and well-recognised workers in community health—the family doctor, the public-health staffs and maternity nurses, the teachers, and the administrators—can adopt the viewpoint and use the skills of the mental hygienist, and can see the interaction of society and personality, then we shall have begun the work of real prevention.

7. Parsons, T. Essays in Sociological Theory, Pure and Applied. Glencoe, Ill., 1949; p. 233.

8. The economic pull of industry will, and is often—regrettably—permitted to, lure young fathers away from village homes into barrack life, without regard for human misery.

9. Proceedings of the International Conference on Mental Health, London, 1948. Statement of International Preparatory Commission, in vol. IV (p. 285). London.

THE SUTTON COLDFIELD RAILWAY DISASTER

Evacuation of Casualties

IN the derailment of the York-Bristol express at Sutton Coldfield on Jan. 23, 17 people were killed and 41 were seriously injured. With the considerable resources of the Birmingham area within ten miles, it was possible to treat this number of injured with no more than a spurt from the normal casualty machinery of the local hospitals. The first stages of the prearranged plans for dealing with a major catastrophe in the area were in fact put into action, but it turned out that the hospitals were able to cope without taking any of the later steps that had been agreed upon.

Last year [1] the Ministry of Health suggested to hospitals and local health authorities some ways in which their organisations for dealing with big accidents might be improved; and the effective handling of the casualties at Sutton Coldfield has again illustrated the importance of detailed preparedness. The emergency plan which had been decided upon for the Birmingham hospitals had been drawn up in coöperation with the police, the ambulance authorities, the general practitioners, the industrial medical officers, and the voluntary organisations. This was, of course, only a part of the response evoked by this particular accident, the greater share being contributed by the organisation for Sutton Coldfield itself, and particularly by the local general practitioners; but it may be useful to summarise some of its provisions, which no doubt are much the same as those that have been agreed to in other parts of the country.

The Birmingham Plan

A major catastrophe is defined as one involving 50 or more seriously injured casualties, *or* one that is determined as such by the duty officer at the fire and ambulance control centre in the light of the circumstances. The decision as to whether the plan should come into operation is thus the responsibility of the duty officer at the control centre, though he will consult if necessary with the medical officer in charge of casualty services (who will go to the spot) and the medical coördinating officer (who will go to the control centre).

When a catastrophe is declared, it is the task of the hospital services to provide (*a*) a team or teams of doctors and nurses, with equipment drawn from hospitals, to join in setting up first-aid posts at the scene of the accident; and (*b*) a medical officer in charge of the casualty services, who will organise and direct first-aid on the spot, and pass back information about the nature and number of the casualties to the medical coördinating officer, who will ensure that the first-aid teams get what they want and that the casualties are taken to the hospitals best prepared to receive them.

At the same time the police will send two wireless cars to the scene and establish an "incident post" which will be in touch by telephone or wireless with the control centre and the central police information room. The police will also provide a limited quantity of first-aid equipment. It will be their responsibility to record the names and addresses of those involved, and to give information to inquirers at the scene or via the police information room. ("The importance of the police obtaining such information cannot be minimised, but on no account will ambulances be delayed for this purpose.") If necessary the police will arrange special mortuary accommodation near the scene.

At the outset the duty officer at the control centre will tell the doctors and administrators chiefly concerned what has happened, and he will direct to the scene ambulances, emergency equipment, control van, canteen van, floodlight tender, and fire-fighting equipment.

At the scene the medical officer in charge of the casualty services, who will be a senior surgeon, will keep in close touch with the senior police officer and the senior fire and ambulance officer. His duty will be the organisation and direction of all first-aid services, including those offered by people who go to the accident on their own initiative. He will advise the medical coördinating officer how many casualties there are likely to be and how things are going.

1. See *Lancet*, 1954, i, 1225.

At the control centre, the medical coördinating officer will work in conjunction with representatives of the police, the fire and ambulance service, the St. John Ambulance Brigade, the Red Cross, the executive council, and the hospital authorities to see that all the arrangements go forward in the best possible way.

General practitioners and other doctors may be on the scene within a few moments of the accident, but the Birmingham authorities decided that it would be wise to put out hospital first-aid teams in support. 4 teams, each consisting of 1 doctor and 4 nurses, are on immediate call at hospitals in the area, and another 10 teams are available at two hours' call. The plan sets out in detail the equipment which the teams will take with them.

The blood-transfusion service will be asked to send a flying squad, including specially trained personnel of the St. John Ambulance Brigade and the British Red Cross Society. An industrial medical officer, if possible with a first-aid team from a nearby factory, will also report to the incident post.

The clerk of the executive council will ask 3 general practitioners in the neighbourhood to help, and another 3 to hold themselves in readiness.

The plan also includes details for mobilising the forces of the St. John Ambulance Brigade and the British Red Cross Society.

The hospitals themselves will arrange to empty beds by sending home patients who are fit to go. They will tell the coördinating officer at half-hourly intervals, or more often if necessary, of the changes in their resources for dealing with outpatients and inpatients.

This is the outline of a plan that is straightforward and precise—the logical application of the machinery of battle evacuation to a thickly populated area. For the Sutton Coldfield accident it was never necessary to put the whole organisation into top gear; but it was clear that it could readily have handled the grave situation that might have arisen if the Birmingham-York train had run into the wreckage—as so nearly happened. It was made plain at Harrow and Wealdstone station two years ago that any official plan can always count on a flood of unofficial help from all around, and this was again forthcoming on this occasion. Local practitioners, nurses, and many others were quick to respond, and valuable assistance came from a nearby R.A.F. station.

Experiences at the Accident Hospital

As for the details of the plan, the most debatable point is just how much in the way of resuscitation and other treatment should be undertaken before the injured are moved to hospital. Last week Mr. William Gissane, clinical director of the Birmingham Accident Hospital, discussed the outcome of the accident with his colleagues at the Accident Hospital, and one of the questions they considered was whether a more useful type of casualty-clearing station could be set up at the site of a serious accident or whether speedy evacuation was in fact the most important thing to concentrate on. Mr. Gissane and his staff thought that for a mass accident in Birmingham within, say, five to eight miles of the Accident Hospital, speed of evacuation to that hospital should be the overriding consideration. Once at such a hospital full resuscitation and treatment services could be brought to bear. If the journey to hospital was over ten miles there was, they felt, a case for setting up a casualty-clearing station at the site, although this obviously had many practical difficulties. It would always be a matter of considerable organising difficulty to set up an efficient casualty-clearing station at the site of an accident, under adequate medical control, with a speed in any way comparable to that of the rescue and ambulance services. Mr. Gissane pointed out that to justify more resuscitation on the spot it was necessary to establish the casualty-clearing station very quickly—say, within forty minutes of the disaster. And it was vital that a surgeon of exceptional experience should be there to assess which cases should wait and which should go on at once. Another point to consider was whether the hospital to which the injured were to go had a full emergency service

ready to go into action. One of the men injured at Sutton Coldfield was in urgent need of resuscitation when he reached the Accident Hospital at 5.15 P.M. (one hour after the crash), and the feeling was that this was a case in which transfusion might profitably have been started on the spot. The possibility of having specially trained technicians to start transfusions was mentioned. One or two patients might have travelled better if more splinting had been applied. Mr. Gissane said that first-aid might be simplified by the use of a new type of stretcher which was under investigation at the Accident Hospital. This was made of fibre-glass lined with foam rubber and so moulded to the body outline that when the patient was placed in it the limbs were effectively splinted and painful movements reduced.

Another point brought out at the discussion was the importance of local knowledge: things were much easier for the surgeon in charge at the scene when he was thoroughly familiar with the district and with the police, the ambulance and fire personnel, and others directly concerned. When it comes to supplying information to the control centre, the difficulty may be to estimate the likely number of casualties, which can never be easy when the injured are entangled in heavy wreckage. It may not always be possible for those on the spot to say where the evacuated casualties have gone to or how many have been got away. Clearly, if the injured are being extricated at several different places and taken off by various routes, it will not always be feasible to give the control centre exact numbers without risk of delaying the ambulances.

The Accident Hospital received 13 of the casualties, roughly the same number as came in from other sources during the same time. Sutton Coldfield Cottage Hospital, which was very close to the accident, took most of the injured in the first place and acted as a casualty-clearing station on the way to the big hospitals.

Evacuation or Resuscitation?

Not everyone will agree that there is much of a case for delaying the removal of shocked patients so that their condition can be improved by giving plasma or blood substitutes. As we said after the Harrow accident,[2] many people will think that in an area where big hospitals are within easy reach it is better to get the injured away without waiting to do more than cover open wounds, splint fractures, and give morphine, and that the only clear indication for immediate transfusion or operation is when a seriously shocked person is trapped with little chance of being got out for some time. It may be a different matter when there is a long way to go or when the going by road is likely to be bad. In these circumstances helicopters would be very useful. All things considered, it seems it would be an exceptional accident—for this country at any rate—in which the injured, once extricated, could not be got to hospital so quickly that any long delay for resuscitation or operation would be unjustified. But that is not to say that arrangements for immediate transfusion or surgery should not be included in the plan: they may rarely be needed but they will then save life.

GENERAL PRACTICE IN SCOTLAND

THE sixth annual report of the Scottish Medical Practices Committee[3] states that at the end of last June there were 2543 doctors undertaking to provide general medical services in Scotland compared with 2505 in 1953 and 2424 in 1952. As a result of the "notional list" payments many doctors have taken partners for the first time or, in established partnerships, have increased the number of partners. For the first time since the start of the National Health Service the average number of patients on doctors' lists throughout Scotland has fallen below 2000.

ENTRY INTO PRACTICE

During the year 106 doctors died or resigned, and the committee granted 143 new applications for admission to medical lists. Of these applications 43 were from doctors who had been selected to fill practice vacancies (including 13 to fill vacancies in partnerships), 82 from doctors who wished to enter into partnership with established doctors, and 18 from doctors who wished to set up new and independent practices. In addition, there were granted 64 applications from doctors already on medical lists who wished to extend their practices into neighbouring executive-council areas.

The committee refused 26 applications for inclusion in lists, of which 15 were from doctors wishing to extend their practices into neighbouring areas. Of the 11 appeals to the Secretary of State for Scotland against these refusals, 2 were withdrawn before a decision was reached, in 8 the decision of the committee was upheld, and in 1 the decision of the committee was modified. 2 other doctors appealed against the imposition of conditions by the committee in granting their applications for admission. In both instances the decision of the committee was upheld.

During the year practice vacancies were dealt with as follows:

(*a*) Filled after advertisement:			
(i) by a doctor new to the area	24		
(ii) by a doctor already on the medical list for that area	2		
			26
(*b*) Filled without advertisement:			
(i) by the replacement of a partner ..	13		
(ii) by the appointment of a new doctor ..	4		
(iii) amalgamated with existing practice or practices	29		
			46
(*c*) Dispersed (patients advised to make a fresh choice of doctor)			23

Of the practices dealt with by amalgamation, 6 had lists of under 500 patients, and 11 lists of under 1000. All the dispersed practices were small; the largest had 527 patients.

Over 800 applications were received for the 26 advertised vacancies. But some applicants applied for more than one vacancy. The average age of successful applicants during the year was 36, the range of ages being from 27 to 56. Of the 13 appeals by unsuccessful applicants, 1 was withdrawn; 9 were determined summarily; and 3 were decided after a hearing. In 2 instances, both after a hearing, the decision of the executive council was overturned. In the remainder the selection of the executive council was upheld. When an appeal is successful, the committee directs that the successful appellant be appointed instead of, or in addition to, the doctor selected by the executive council.

CERTIFICATES IN CONNECTION WITH GOODWILL

The committee considered 28 applications for a certificate that a proposed transaction did not involve unlawful sale or purchase of the goodwill of a practice. Where the committee was at first unable to grant the desired certificate, most of the applicants submitted amended proposals which justified a certificate. The committee draws attention to the fact that the sale of goodwill is prohibited no matter how indirect that sale may be. The performance of services for an unreasonably low return, for instance, is deemed to constitute the sale of goodwill whatever the intention of the parties may be. The committee appreciates that difference in age, experience, and ability of the partners justifies some initial disparity in shares of the profits, but, as the new partner gains in experience and assumes a greater responsibility in the work of the practice, his share in the returns should increase proportionately if the return for his services is to be regarded as reasonable.

2. *Ibid*, 1952, ii, 1117.
3. The members of the committee are DR. A. F. WILKIE MILLAR, DR. WALTER JOPE, DR. J. R. LANGMUIR, MR. A. I. MILLAR, DR. C. STEWART SANDEMAN, and MR. H. A. SHEWAN, Q.C.

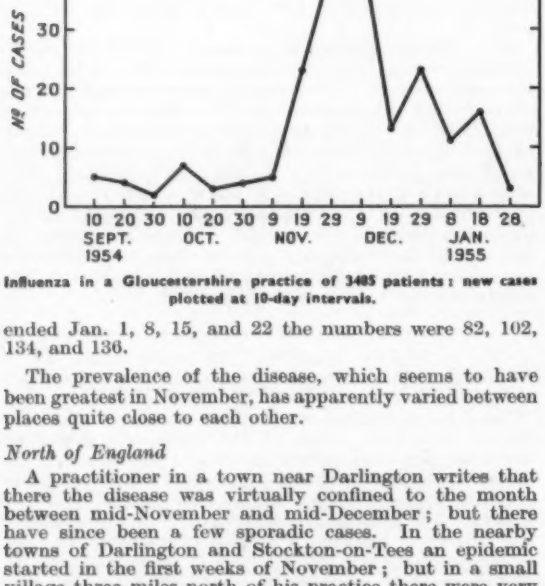
Public Health

INFLUENZA

THIS winter's influenza seems to have been mostly due, until now, to the B virus. There were a few cases of influenza-B infection in the spring of 1954; and the virus was found in Wales in September, and then in the North of England, in Scotland, and, more recently, in the South of England. The over-all incidence in the country has not been so high as during epidemics of influenza A; all ages have been affected, but there has been a high attack-rate in children. The last epidemic of influenza B of comparable size in this country was in 1945–46, since when the infection seems to have been endemic with sporadic cases detected each winter. Presumably, therefore, the children infected this winter include many who escaped the 1945–46 epidemic.

Influenza-A epidemics usually occur every two to three years, and in this country we had epidemics in 1947, 1949, 1951, and 1953. This year the influenza-A virus has apparently defied the laws of arithmetic, and there have been only sporadic cases. Elsewhere in the world there have been no reports of major epidemics of influenza. An epidemic of influenza B was recently reported from Northern Holland, and cases have been notified from Germany, Malaya, and Canada. The winter is not yet over, but in the world as a whole the contrast between this winter's experience so far and that of an epidemic winter is very striking.

In England and Wales deaths attributed to influenza in the 160 Great Towns rose from 15 in the week ended Nov. 13 to 66 in the week ended Dec. 18. In the week ended Dec. 25 the total was 56; and in the four weeks ended Jan. 1, 8, 15, and 22 the numbers were 82, 102, 134, and 136.



Influenza in a Gloucestershire practice of 3485 patients: new cases plotted at 10-day intervals.

The prevalence of the disease, which seems to have been greatest in November, has apparently varied between places quite close to each other.

North of England

A practitioner in a town near Darlington writes that there the disease was virtually confined to the month between mid-November and mid-December; but there have since been a few sporadic cases. In the nearby towns of Darlington and Stockton-on-Tees an epidemic started in the first weeks of November; but in a small village three miles north of his practice there were very few cases, even though many of the adults work in one or other of these towns.

The epidemic, though short-lived, was the worst as regards number and severity, in the past seven years. At first the infection affected principally those aged 5–10 years; and at one time the school attendance of those in this age-group was only 33–38% of the total.

Clinically there was sudden onset of fever, headache, sore throat, and sometimes cough; epistaxis was common, and in several cases this was profuse and recurrent. In perhaps a quarter of the cases in young children pyrexia persisted for five to seven days, and convalescence took two to three weeks. About half the adult patients were severely affected, with gross lassitude after the febrile phase. Among the children there were no complications. Among the adults complications included pneumonia (4), otitis media (2), and arthritis (1).

TABLE I—AGE-DISTRIBUTION OF CASES OF CLINICAL INFLUENZA IN A GLOUCESTERSHIRE PRACTICE, SEPT. 1, 1954–JAN. 21, 1955

Age (yr.)	Male			Female			Total		
	Pop.	Influenza		Pop.	Influenza		Pop.	Influenza	
		No.	%		No.	%		No.	%
0– 9	285	22	7·7	285	34	11·9	570	56	9·8
10–19	189	23	12·2	208	25	12·0	397	48	12·1
20–29	205	5	2·4	237	14	5·9	442	19	4·3
30–39	268	6	2·2	244	19	7·8	512	25	4·9
40–49	270	13	4·8	217	10	4·6	487	23	4·7
50–59	213	7	3·3	191	6	3·1	404	13	3·2
60–69	163	4	2·5	179	5	2·8	342	9	2·6
70–79	113	6	5·3	140	5	3·6	253	11	4·4
80–89	30	2	6·7	41	0	0	71	2	2·8
90–99	2	0	0	5	0	0	7	0	0
Total	1738	88	5·1	1747	118	6·8	3485	206	5·9

West Country

A doctor with a mixed urban and rural practice in Devonshire writes:

"Here the epidemic started in November last and now appears to have passed its peak. The disease, though widespread and highly infective, has been mild. Serious complications have been extremely rare. Children seem to have been affected more than adults. In most cases the febrile stage has not lasted longer than three or four days, but occasionally it has lasted for a week or more. Clinical manifestations other than pyrexia have been headache, malaise, sore throat, cough, and gastro-intestinal disturbance—e.g., colic, vomiting, and diarrhœa. For quick recovery rest in bed has proved of paramount importance, with some drug of the aspirin group for the relief of symptoms. Cases in which pyrexia has been prolonged have apparently responded to aureomycin."

From Gloucestershire a doctor with an urban and rural practice of 3485 patients reports that between Sept. 1 and Jan. 24 there were 206 cases of "clinical influenza." (This he defines as a febrile illness of sudden onset, associated with aching and upper respiratory infection.) There was a small burst of cases in September and a much more severe one in November and December with a peak in the ten days between Nov. 19 and 29 (see accompanying figure). The figures for November include an explosive outbreak affecting children up to 14 years of age, in whom the syndrome included sudden severe pyrexia, delirium, and epistaxis. One child had red vision: "She saw the world literally rose-coloured for a few days before the onset of fever." Complications have been few; the two commonest were otitis media (5)

TABLE II—AGE-DISTRIBUTION OF THOSE ATTACKED WITH INFLUENZA BETWEEN SEPT. 1 AND JAN. 7 IN A GROUP OF 295 VOLUNTEERS

Age (yr.)	Males	Females	Total
0– 9	23	19	42
10–19	6	8	14
20–29	1	7	8
30–39	8	12	20
40–49	8	3	11
50–59	1	5	6
60–69	2	3	5
70–79	1	1	2
80–89	0	0	0
Total	50	58	108*

* 36·6% of total.

and pneumonia (10). 4 patients had a second attack; but of 295 patients who for the past twelve months have been keeping a daily record of the presence or absence of respiratory illness, 10 recorded second attacks. Tables I and II show the age and sex distribution of cases in the practice and in these volunteers. The incidence is clearly higher in the volunteers; and the difference may give a rough guide to the proportion of patients with illness of this sort who do not seek medical advice. So far the disease has been neither so common nor so severe as in the winters of 1951 and 1953.

Home Counties and London

A practitioner in Buckinghamshire writes:

"Influenza reached us about the middle of January, and by the weekend of Jan. 22 the epidemic was at its peak; it seems to be on the wane now. The virus afflicts all age-groups, but is relatively mild; there have been no deaths. It is highly infectious, whole families being affected; the housewife stays on her feet until her family is over the worst, then succumbs herself. Three-quarters of the school-children were away at once.

"The incubation period is about three days; the onset is with shivery feelings and sore throat, followed by headache and pains in the back and limbs. In this epidemic aches and pains are sometimes distressingly severe, but often are absent. Nasal congestion occurs with little discharge, and an irritating cough develops. A few patients have abdominal pain and vomiting. This melancholy business drags on for four or five days, leaving the victim weak and depressed. Otitis media has been an occasional complication."

A practitioner in North London doubts whether he has seen this winter any cases of true influenza; and certainly there has been no epidemic among his patients. But he has seen sporadic cases of a febrile illness starting with gastro-intestinal disturbance (abdominal pain or diarrhœa). This clears up in twenty-four hours; thereafter pyrexia persists for three or four days, but the patient does not fully recover for a further seven to ten days.

Medicine and the Law

A Doctor's Telephone

THE London Executive Council has ruled that a doctor is not required to have a telephone at his residence or surgery, and that if he has a telephone, he is not obliged to let his patients use the number.[1]

This ruling was given on a complaint by a mother who said that she waited all day for the doctor to visit her 8-year-old daughter who had tonsillitis. She could not get in touch with the doctor because, as far as she knew, he was not on the telephone. She could not go to the surgery, because there was no-one to look after the child. When her husband arrived home in the evening they found another doctor—who treated the child as a private patient.

The medical services committee held an inquiry. In its report to the council it said that the first doctor admitted that he had a telephone but said it was not available for patients. The committee considered that there had not been a breach of the conditions of service. The members of the council clearly disapproved of the doctor's conduct, but adopted the recommendation that he had not committed a breach of the terms of service. A member of the council suggested that the public should insist on going on the list of a doctor who was accessible by telephone.

The council's ruling is clearly correct having regard to the terms of service attached to the General Medical and Pharmaceutical Services Regulations. But these statutory terms of service, which must be incorporated in every individual contract, are not exclusive. The executive council is entitled to add to them; and this can be done even after the contract has been entered into, provided the Minister of Health gives his sanction.

Postal Treatment

The Pharmacy and Medicines Act, 1941, makes it an offence to sell by retail any articles consisting of a substance recommended as a medicine without the appropriate designation or quantitative particulars. This does not apply to an article made up and supplied for the use of a particular person, being an article prescribed by reference to the needs of that person. This exception is essential—without it no chemist could make up a doctor's prescription—but it provides a loophole for firms who claim to treat diseases by post.

Mr. H. H. Bagnall, the city analyst of Birmingham, in his report for the third quarter of 1954, mentions the case of a firm who claimed to treat psoriasis in this way. In one case the firm supplied a medicine containing a common purgative, an ointment which was an emollient cream containing lanolin, and a powder to be used for making a lotion; this last item consisted of boric acid.

Mr. Bagnall suggests that the law should be amended to require that all stock mixtures, powders, pills, and so on should be labelled with a list of ingredients unless they are supplied on prescription by a doctor.

1. *Daily Telegraph*, Jan. 28, 1954.

Parliament

Care of the Elderly Sick

IN the House of Commons on Jan. 28, Mr. HECTOR HUGHES drew attention to the inadequate provision made for the elderly sick. The problem, he declared, presented a striking paradox. Hospital accommodation would be adequate, quantitatively at least, in most areas if local authorities developed their preventive and domiciliary services to the full. As a result, with some exceptions, the regional hospital boards were unwilling to increase the number of beds for the elderly. Many local authorities, instead of putting their own house in order, blamed the regional hospital boards for not providing more beds. An important contribution to the problem in his view would be to bring the full number of health visitors into operation. Their salaries, pensions, and general conditions should be improved to encourage recruiting. Old people must be kept out of hospital as far as possible, and that was where the health visitor was the key. The present scarcity of health visitors placed unduly heavy case-loads on the comparatively few. Before 1948, when health visitors were concerned only with expectant and nursing mothers and young children, the standard case-load was 100 to 120 births per health visitor per year. With a normal birth-rate of 16 to 17 per 1000 of the population that meant that before 1948 a health visitor was needed for every 6000 to 6500 of the total population. Today, with her extended duties, it was impossible for the health visitor to cover a population of more than 3000, and many experts advocated smaller case-loads.

Mr. SOMERVILLE HASTINGS thought that the first thing to do was to improve the services for finding out when old people—and particularly those living alone—were ill and needed help. In many areas there were preventive clinics for old people which provided means of keeping in touch with these cases. He agreed that old people should be kept out of hospital as far as possible. They often seemed to die there from some inexplicable cause. Like other people, if they were to be healthy they must be kept busy. He would like to see more one-storey flats built in housing estates so that elderly people could avoid stairs. Though it might cost local authorities money to treat old people in their own homes, it was infinitely cheaper to the community than removing them to an expensive hospital, quite apart from the additional happiness to the patient.

QUESTION TIME

Air Pollution

Replying to a question, Mr. DUNCAN SANDYS, Minister of Housing and Local Government, said that the main recommendations of the Beaver Committee were as follows:

(1) That, subject to certain exceptions, the emission of dark smoke should be prohibited by law.

(2) That industries, when installing new plant, should be required to take all practical steps to prevent the emission of grit and dust.

(3) That, subject to confirmation by the Government, local authorities should be empowered to designate "Smokeless Zones" and "Smoke Control Areas."

(4) That the duty of inspection and enforcement should be placed upon local authorities, except in the case of certain industrial processes, which should be supervised by Government inspectors.
(5) That householders in smoke restricted districts should be required to burn only smokeless fuel, and that the cost of converting domestic fireplaces for this purpose should be met, to a large extent, by grants from the Exchequer and the local authorities.

Mr. Sandys said that the Government were examining with outside interests the far-reaching questions involved. Preliminary discussions indicated that industry would be ready to play its part in implementing this policy, and that the local authorities would be prepared to accept the additional responsibilities involved. Similar consultations were taking place in Scotland. The Minister of Fuel and Power was examining the question of increasing the availability of smokeless fuels. While reserving their position regarding individual proposals, the Government had decided in principle to adopt the policy recommended by the Beaver Committee.

Training of Spastics

Replying to a question, Mr. H. A. WATKINSON, parliamentary secretary to the Ministry of Labour, said that he was aware that some spastics at school-leaving age or later might profit from a course of preliminary training before employment, to enable them to use their limbs more effectively. He understood that the voluntary organisations had in mind the establishment of centres where this kind of training could be given. One of the voluntary organisations had discussed it with officers of the Ministry of Labour and was aware of the extent of the assistance which could be given at a later stage of training under the Disabled Persons (Employment) Act.

Mr. E. S. T. JOHNSON: Is the Minister aware that the existing centres cater chiefly for lightly handicapped spastics and the hard core of the problem of employment and training of spastics is not really touched?—Mr. WATKINSON: It is hoped that, as a result of the initiative of the bodies interested, there will be further centres, and, if so, we shall do what we can to help.

Patients' Diet

Replying to a question, Mr. IAIN MACLEOD, Minister of Health, said that he was informed that since July, 1953, the Dartford Hospital Management Committee had authorised the officers in the general hospitals in their area to spend up to a certain weekly sum per head of staff and patients without further reference to the committee. The sum was at present 26s. a week. There was no such procedure in the mental hospitals in the area.

The Case of Mrs. Christofi

Replying to a question, Major GWILYM LLOYD-GEORGE, the Home Secretary, said that of the three doctors appointed to conduct a medical inquiry into Mrs. Christofi's mental condition, one held a diploma in psychological medicine, and the other two—a former medical superintendent of Broadmoor Institution and a former director of prison medical services—had long and special experience of cases of this kind. The doctors had two prolonged interviews with the prisoner. They also interviewed the governor of the prison, the Church of England chaplain, the prison medical officers, the Greek Orthodox priest who ministered to Mrs. Christofi, and the prison officers who had charge of her.

Medical Superintendents of Mental Hospitals

Mr. KENNETH ROBINSON asked the Minister of Health if he was now prepared to make a statement on the observations of the Central Health Services Council with regard to medical superintendents of mental hospitals.—Miss PATRICIA HORNSBY-SMITH replied: The Minister does not consider that it would be appropriate at present to introduce model standing orders for the general government of mental and mental-deficiency hospitals defining the functions of the medical superintendent.

Cost of Proprietary Medicines

Replying to a question, Miss HORNSBY-SMITH said that discussions had been proceeding with the Association of British Pharmaceutical Industry, and the Minister of Health was considering the position now reached. Meanwhile, there had been some downward trend in the prices of preparations in those classes which were under investigation, and special provisional reductions had recently been arranged with certain manufacturers in the prices of 19 of these preparations.

In England Now

A Running Commentary by Peripatetic Correspondents

IT was a bitterly cold day early last month when we set out to visit the Blanks. There were four of us: the Welfare Worker, the Farmer, the Clerk to the Council, and the Medical Officer of Health (me).

Mr. and Mrs. Blank, aged 84 and 79, though they are within seventy miles of London, live in a most isolated spot. To reach them you go up a side-road to a farm, then along a rough cart-track for a mile or so. After that even the farm-truck can go no further, so you get out and walk. After crossing four fields you come to the cottage. Nothing is ever delivered to such an out-of-the-way place, no milk, no coal, no paraffin. Everything has to be carried by Mr. Blank from the nearest village, which is several miles away. For fuel he collects wood from a nearby coppice. In winter the sticks are often wet and will only smoulder. It is practically impossible for them to prepare any hot food. Mrs. Blank is partially crippled and hobbles about with a stick. She has not been away from the cottage for eight years.

Many attempts have been made to persuade the Blanks to move to an old peoples' hostel or home, but they have always refused. During the past few months conditions had clearly worsened, and we were all worried about what could be done to help the old couple. It was impossible to send a home help to a place so far off the beaten track, because it takes most of a morning just to make the journey. For this reason, too, the Welfare Worker could not visit them often. Sometimes the Farmer's wife prepared some food and took it over the long journey to the cottage, but she was a busy housewife and could not do this often.

So we all set off on this cold winter morning to try once again to persuade the Blanks to go to a hostel, and, if we were not successful, to consider their compulsory removal under the National Assistance Act. I was anxious to avoid this. For one thing I don't like pushing people around, and for another I could foresee that a compulsory removal across four fields might present technical difficulties.

The old man opened the cottage door in response to our knock. The furniture consisted of a bedstead, two chairs, and a cupboard which Mr. Blank was chopping up to get some dry wood for the fire. Dirt and dust and cobwebs were everywhere. Mrs. Blank sat huddled over the grate, where one ember glowed fitfully. All she had on was a threadbare dress and an old coat. Her feet were poking out of an ancient pair of shoes in several places. The old people had had nothing to eat that day and there was no food in the house. Mrs. Blank seemed to think that it would be rather nice to go to a home where she could be warm and comfortable. Mr. Blank was sure that he didn't want to move. We talked and talked and talked, but we were up against a brick wall. Any members of the party not engaged in talking gathered sticks and tried to make the fire burn. Still Mr. Blank refused. Still we talked on. Then suddenly he relented and said he would like to accept our offer.

We set off across the fields to the farm house and got busy with the telephone. We must have accommodation at once, we said, we must have it today. We felt that another night in the cottage might mean the end of Mrs. Blank. The welfare services rose nobly to the situation. A vacancy was found and soon a hospital car was on its way. The Farmer solved the problem of how to convey Mrs. Blank across the fields, and soon had a tractor standing by with its trailer padded with great bales of straw. This could go right to the cottage door. A strange procession then began to wind its way across the fields, tractor and trailer, followed warily by hospital car, followed by the farm truck. When the car had got as far as it dared we all dismounted and followed the tractor on foot. We wondered if Mr. Blank would by now have changed his mind and refuse to come with us, but all was well. Mrs. Blank was assisted to the trailer, where she reclined in the straw and we surrounded her with hot-water bottles and covered her with blankets. Mr. Blank got in beside her, and we began the slow journey back. The temperature was round freezing point and it was Mrs. Blank's first journey for eight years.

"It might have been worse," said the Welfare Worker, "it might have been raining." By the time we reached the car Mrs. Blank didn't look in very good shape. "I think we were only just in time," said the Farmer. However, tucked up in the car with a hot drink inside her, Mrs. Blank soon revived. "It is very kind of you," said Mr. Blank, "to help us in this way; very kind indeed." I went to the car to have a last look to see that all was well with his wife before the next stage of the journey. "Are you feeling comfortable?" I asked. "Ever so warm" she assured me; and her dirt-grimed face smiled as she added. "what I'm really looking forward to more than anything is a nice hot bath."

* * *

I believe I can help my fellow peripatetic in his difficulty over the draught-proofing of his cat-hole.

The flap of hard-board should be pivoted at the bottom, using a fabric or leather hinge, such as is found on clothes-horses. Secondly, the base of the flap should be increased in thickness to that of the door, by nailing a piece of square batten along each side of the hard-board. Two pieces of strong elastic, stretched one from each side of the flap to points on the door below the hole, will then cause the flap to spring back to the shut position after the animal has passed through. It will remain closed even in strong wind.

Our own hole was made for a cat, and afterwards enlarged for a Shetland collie. We have now moved house, but I believe the new owner (a dachshund) uses it without difficulty.

I believe your correspondent's puppy objects to using his nose and forehead to raise the flap. With our modification, the forefoot is used to depress the flap and hold it down. I tried fitting a piece of door-mat to the outer side of the flap in order to reduce the incidence of foot-marks in the kitchen, but my wife reported that the effect was not statistically significant. At her insistance, a bolt was fitted giving control of the inward opening of the flap.

* * *

The mobile antenatal and child-welfare clinic was withdrawn from my district of darker Africa because attendance was inadequate. But the following letter suggests that we underestimated its place in the public regard.

Sir,—It seems apparently clear that for some months now, the Mobile Van of your department has seized plying her way through the various towns and villages she used to visit.

This van, as you are well aware of, bestows a lot of health advice, guidance, and innumerable series of help on depressed patients and old infirm elements in her course of travel.

You can very well picture out the dreadful conditions into which the natives concerned are thrown these days of her seizure of work.

I am, therefore, by request, to solicit your favour earnestly to consider this awful situation of our people, and let the Van start again her beautiful piece of work, should nothing so much hamper your voice and decision.

I have &c.,
Clerk of District Council.

* * *

Is so much red tape necessary? Defending its use, a Civil Servant once asked me: in what better way could one file together, say, several folders of papers, some photographs and a book, all on one subject? An even better use for it was revealed to me yesterday on a visit to a Ministry (not Health). Sitting with a desk between me and my host, I noticed that my chair lacked mobility: on inspection I discovered it to be attached to the desk with red tape and pins. This device apparently discourages borrowing.

* * *

Conscientious New Assistant: There's a call just come through to go and see Mrs. X.

Principal: Oh, well, that could probably wait till tomorrow.

C. N. A.: Well it might be urgent.

P.: Nonsense. I know Mrs. X. If it couldn't wait till tomorrow she would have phoned yesterday.

Letters to the Editor

AN ISONIAZID DERIVATIVE

SIR,—We have previously outlined the tuberculostatic properties of *o*-hydroxybenzal isonicotinyl hydrazone, and mentioned work on the effect of this new compound on the emergence of resistance to isoniazid.[1]

We have now shown that after eight transfers the minimum inhibitory concentration of isoniazid in vitro against *Mycobacterium tuberculosis* H37Rv increases from 0·03 μg. per ml. to 7·81 μg. per ml., while that of *o*-hydroxybenzal isonicotinyl hydrazone ('Nupasal 213') increases from 0·06 μg. per ml. to 7·81 μg. per ml. Thus the resistance to these two drugs separately is increased 260 and 130 times respectively. On the other hand, in mixtures of the two substances, isoniazid at a constant level of 0·01 μg. per ml. has allowed the resistance to nupasal to develop from 0·06 μg. per ml. to 0·48 μg. per ml. —that is, an increase of only eight times—even after ten transfers. Similarly a constant level of 0·01 μg. per ml. of nupasal has permitted an increase in resistance to isoniazid of 0·03 μg. per ml. to 0·24 μg. per ml.—again only an increase of eight times—in ten transfers.

Thus isoniazid and *o*-hydroxybenzal isonicotinyl hydrazone appear to act mutually on the development of resistance, each drug distinctly delaying the emergence of resistance to the other.

This result appeared at first somewhat surprising in view of the close chemical relationship between the two drugs; but our findings have been confirmed by Steenken et al.[2] These results suggest that the combination of isoniazid and nupasal 213 may be of clinical value in delaying emergence of resistance to both substances, and experiments are now in progress to obtain further evidence on this point.

E. M. BAVIN
E. KAY
D. E. SEYMOUR.

Smith & Nephew Research Ltd.,
Ware, Herts.

VENEREOLOGY AND DERMATOLOGY

SIR,—I have followed the correspondence on this subject with dismay, as I have learnt from it that there is a tendency in some quarters to relegate the care of venereal diseases to dermatologists, as in the bad old days when, in the infancy of the national venereal-disease service under the Local Government (Venereal Diseases) Regulations, 1916, hospitals, asked to establish venereal-disease treatment centres within their walls, almost automatically handed the charge of them to their dermatologists or, much less often, to their urologists. In twenty-seven years as adviser on venereal diseases to the Ministry of Health, I had ample opportunities of judging the weaknesses of such an arrangement and have no hesitation in saying that the principle is bad. Whatever may be the practice in other countries, neither the dermatologists nor the urologists in this country have, generally speaking, been really interested in the management of venereal diseases in all their aspects—scientific diagnosis, far-seeing treatment, and epidemiological control—and I count amongst the few good things I have done in my life the divorce of venereology from dermatology, which I began at Rochester Row in 1910. Today the combination of dermatology with venereology is even less supportable than it has ever been because, to judge by the annual report of the chief medical officer, Ministry of Health, for the year 1953, of the 98,671 new cases dealt with by the venereal-diseases treatment centres in England and Wales in that year, only 6542 were of syphilis or soft chancre. I do not know how any venereal disease came to be regarded as within the province of dermatology but assume that it was because a common feature of syphilis, now relatively uncommon,

1. Bavin, E. M., Kay, E., Seymour, D. E. *Lancet*, 1954, ii, 337.
2. Steenken, W., Wolinsky, E., Montalbine, V. *Proc. Soc. exp. Biol., N.Y.* 1954, **87**, 245.

was a rather persistent rash. As regards the remaining fourteen-fifteenths of the new cases seen in the centres in 1953, one would judge that, in the absence of trained venereologists, their management would more appropriately be entrusted to the urologists and the gynæcologists.

Admittedly there may not be work in many centres to require a visit by a consultant venereologist even so seldom as once a week, but it should be easy to train medical men and women of less than consultant status to carry out instructions, given at appropriately spaced visits, by consultant venereologists. It is in diagnosis and the framing of instructions for treatment and the prevention of transmission of venereal diseases that the skilled venereologist is required, and if this work is relegated to dermatologists, whose chief interest is rightly in another sphere, great harm will certainly result. The management of venereal diseases may seem simple to the administrators who arrange the manning of the different medical services, but I feel sure that such a view would change if they visited a well-conducted venereal-diseases treatment centre. They would see that the good venereologist, besides making good diagnoses and arranging good treatment, must do all those things which have for their object not merely the prevention of transmission of venereal disease by the patients before them but the prevention of further transmission by those responsible for their present patients' infections. Thanks to the antibiotics, a very useful step forward has been made in the campaign against the venereal diseases, but the battle has not yet been won, and to act on the assumption that the remaining problems are negligible is to risk the loss of valuable ground, as a study of table A in appendix C of the C.M.O.'s annual report already quoted would show.

London, S.W.1. L. W. HARRISON.

NEW STUDENT UNIT AT HIGH WOOD HOSPITAL

SIR,—The British Student Tuberculosis Foundation, in coöperation with the North West Metropolitan Regional Hospital Board, has been administering a "pilot" rehabilitation unit at Pinewood since September, 1952. Here, men students from all parts of the British Isles can gradually resume their studies under medical supervision until they are fit enough to return to a full college life. Arrangements have now been completed for the establishment of a further unit, at High Wood Hospital, which will cater for women students needing active treatment for tuberculosis. This broadens the scope of our services, hitherto confined to men in the convalescent stage. These two units will meet the needs of the tuberculous student until the foundation can open a single permanent centre capable of fulfilling the demands of both men and women students from all over the British Isles.

The North East Metropolitan Regional Hospital Board will open a small unit in Brentwood Hospital Management Committee Group at High Wood Hospital, Brentwood, Essex (senior physician, Dr. F. J. Bentley). Here women students from all parts of the British Isles may undergo treatment right from the detection of the disease until convalescence is completed. High Wood Hospital is on the outskirts of Brentwood. Being less than half an hour from Liverpool Street by frequent trains, it is conveniently near London University. The hospital has always been devoted solely to the care of tuberculosis in children and young people, one of the few such specialist hospitals in the country, and its patients have always been drawn from a large area, coming from places as far afield as Southampton and the Isle of Wight in the south and Harwich and Bedford in the north. In the hospital there is a permanent school with some 17 teachers. There are always about 30 children of grammar-school standard, and some of these girls will occupy the parts adjoining the accommodation for women students. The long-established educational atmosphere, friendly but serious, will be a help to women students in continuing their studies as they become fit to do so. The ward chosen is pleasantly situated in the midst of trees and rural surroundings. Each bed is supplied with relay wireless system with headphones and a choice of programme. Television, films, and other general amenities will be available.

The medical care and maintenance of student patients at the new unit have been accepted, as at Pinewood, by the hospital board, under the terms of the National Health Service, and no fees will be chargeable.

Academic arrangements, as permitted by the medical authorities, will be administered under the supervision of the foundation's academic subcommittee, and no fees will be chargeable to students for the study facilities provided. The main bulk of teaching will be given by visiting university teachers, who will supervise the students' work, set and correct written work, and guide reading. The foundation itself possesses a small library of standard textbooks, and book requirements can be met from this and other sources.

All applications will be considered first by the academic subcommittee, which will then forward its recommendations to the medical authorities. Application forms may be obtained on request from the secretary/administrator of the foundation at 59, Gloucester Place, Portman Square, London, W.1.

NICOLAS MALLESON
Hon. secretary.

CHLORPROMAZINE AND GASTROSCOPY

SIR,—For many years it has been my practice to perform gastroscopy on outpatients, who arrive at the hospital in the morning, have the examination in the early afternoon, and return to their homes the same evening. All have felt nauseated to some extent after the examination; most of them also suffered retching, and about 1 in 10 have had to be retained in hospital overnight because of persistent vomiting. My last 50 patients have been given 25 mg. of chlorpromazine by deep intramuscular injection immediately after gastroscopy. Of these 50 only 4 have had any nausea (accompanied in 3 by retching), while none have had to be retained in hospital. 3 had painful injection sites clearing spontaneously after seventy-two hours. It seems to me that chlorpromazine is well worth using as a routine for all gastroscopic examinations. I am indebted to my late house-physician, Dr. D. J. Gorham, for kindly keeping these records.

London, W.1. A. MORTON GILL.

SULPHONAMIDE SENSITIVITY OR LUPUS ERYTHEMATOSUS?

SIR,—I read with interest the case of sulphonamide sensitivity reported by Dr. Fox in your issue of Jan. 22. While not doubting the diagnosis in this case, I feel that certain comments should be made.

Firstly, sensitivity to drugs may be seen at any time during their administration, often after only small amounts have been taken. It should not be confused with toxicity, which depends upon total dosage. In the present case, therefore, it is not surprising that the eruption occurred with sulphadimidine or after a comparatively small total dose.

Secondly, the statement that "the diagnosis of lupus erythematosus was excluded by the marrow smear" seems to imply that a negative L.E.-cell test excludes lupus erythematosus. Although in many of the acute and subacute disseminated cases L.E. cells may be found either in bone-marrow preparations or in the peripheral blood, negative tests are by no means unknown in otherwise typical cases. Furthermore, it appears that examination for these cells was only carried out on one occasion. A single negative test should not be accepted as excluding the presence of these cells, and in suspicious cases the test should be repeated on a number of occasions.

Thirdly, hair fall may be common in sulphonamide sensitivity, but also frequently occurs after any severe febrile illness and it would seem that the hair fall in this case might well be related to this rather than to any specific sensitisation to sulphadimidine.

London, N.W.6. R. H. MARTEN.

"EPIDEMIC VERTIGO"

SIR,—Dr. Leishman (Jan. 29) describes a syndrome characterised by vertigo and some of the following features: tinnitus, nystagmus and ocular pareses, headache, and vomiting. He thinks that this syndrome may not have been noticed in this country before and he adds that some people would not readily concede that the condition was due to an encephalitis.

In 1927 Dr. R. I. Poston, of Manchester, described [1] in your columns six cases of epidemic encephalitis which presented predominantly as vertigo with perhaps spontaneous or induced nystagmus. There was a graduation into the usual picture of epidemic encephalitis with cranial-nerve palsies, increased salivation, respiratory disorders, &c. Dr. Leishman says that on the Continent cases of epidemic vertigo were sometimes accompanied by hiccups; epidemic hiccups were reported at the same time as the epidemic of encephalitis in Great Britain in the 1920s.

I think one should hesitate before accepting Dr. Leishman's syndrome as being in any sense a new one, though one must be grateful to him for reporting these cases. One likes to think that these cases and those which occurred in 1952 will be carefully followed up over the next ten to twenty years.

Hull. J. A. R. BICKFORD.

SANATORIA

SIR,—In your leading article of Dec. 25, prompted by the closing of the Trudeau Sanatorium, you questioned the intrinsic value of the sanatorium treatment of tuberculosis. Mr. L. J. Temple (Jan. 8) has leapt to the defence of sanatoria, but we cannot find ourselves wholly in agreement with him.

For many years it has been a heresy to suggest that tuberculosis could be adequately treated anywhere but in a sanatorium. However, in 1946 when a waiting period of a year for admission was not unusual, many chest physicians undertook domiciliary treatment of tuberculous patients and attempted to bring the sanatorium régime to the home. In some areas minor collapse measures (artificial pneumothorax, pneumoperitoneum, phrenic crush) were added to the routine of rest and graduated exercise. In Southwark the results appeared to compare not unfavourably with the published results of sanatorium treatment; in fact, not a few patients had returned to work before a sanatorium vacancy had been offered. Domiciliary treatment, at first much frowned upon, now appears to be generally accepted.

The advent of the new antibiotics has revolutionised the treatment of tuberculosis. It is common to see patients on bed rest and chemotherapy improve as much in weeks as it would have taken months or years on sanatorium treatment alone. This observation has tempted us to try ambulant chemotherapy in patients with newly diagnosed lesions of doubtful activity and also on others with older lesions showing a tendency to gradual spread. We had not intended to publish our results until we were able to give impressive figures with a reasonable follow-up period, as we wished to have an answer to the storm of abuse which we expected. As your leading article, however, has tentatively suggested ambulant chemotherapy, we would like to report that our results so far are highly encouraging. We are of the opinion that the relief which a patient feels when he is told he need not stop work is more conducive to a satisfactory mental state than months of watching "the serene beauty of forest and meadow" from a sanatorium window. We encountered some difficulty with one patient who had received his education in a very strict sanatorium. We are glad to say he is getting better entirely against his better judgment!

1. Poston, R. I. *Lancet*, 1927, i, 438.

We are of the opinion that it is possible to treat carefully chosen cases of tuberculosis with chemotherapy without bed rest. We would remind your correspondents that the Guy's chemotherapy trials [1] are being carried out almost entirely on the ambulant chronic, and their results are more than satisfactory, having regard to the type of patient treated. This series alone gives the lie to the axiom that "a patient ill enough to be treated with antibiotics is ill enough to be in bed."

Nor can we take the statement about self-treated working medical practitioners very seriously. A report on children's footwear based on a study of "bootmaker's bairns" would be equally misleading.

In conclusion we feel that prolonged sanatorium treatment per se is necessary for a decreasing proportion of tuberculous patients, and that good results from chemotherapy in ambulant patients can be obtained in carefully chosen cases.

Southwark Chest Clinic, Walworth Road, S.E.17. E. K. PRITCHARD W. E. D. MOORE.

OSTEO-ARTHRITIS OF LUSCHKA JOINTS

SIR,—Professor Cave and his colleagues are to be congratulated on their excellent paper (Jan. 22). We should be grateful for their timely correction of the present tendency to attribute almost every case of pain in the neck or arm to cervical-disc protrusion.

It is surprising that they found so low an incidence of related zygapophyseal arthritis, in view of its common association with lumbar-disc degeneration. The explanation must be that the Luschka joints protect the zygapophyseal joints. I cannot agree that zygapophyseal arthritis is symptomless. A zygapophyseal joint is diarthrodial and presumably responds to osteo-arthritic changes, like any other diarthrodial joint, by synovial and capsular thickening, which might well cause root irritation. The posterior capsular ligament of a Luschka joint may be similarly affected. Is it not therefore likely that the periarticular thickenings are responsible for many of the symptoms, and that reversal of this process may lead to amelioration of the pain?

My main criticism concerns their statement that "neck traction is valueless and is likely to aggravate symptoms." My experience is exactly the reverse: provided the technique is correct relief almost always follows.

London, W.1. E. J. CRISP.

SIR,—The interesting article in your issue of Jan. 22 by Professor Cave and his colleagues makes it clear that resection of Luschka's neurocentral apophyses affords the only means of permanent cure for the cervical pains he describes. They suggest, however, that such an operation may not yet be practicable when a number of these apophyses are involved.

It so happens that their exposure is incidental to an operation for tying the reach of vertebral artery that lies between the transverse processes of the 3rd and of the 6th cervical vertebræ. This procedure forms a downward prolongation of the exposure of the topmost segment of the second stage of the vertebral artery (that between axis and atlas), which I described in 1927.[2]

I have just received proof from my publishers of an account of this downward extension, which will appear shortly in a new edition of *Extensile Exposure*. I am indebted to Professor Cave for the opportunity of enlarging the scope of this operation; for, apart from its use in the late war by Colonel D. C. Elkin, of the U.S. Army Service, and nearer home by Mr. Harvey

1. Joiner, C. L., MacLean, K. S., Pritchard, E. K., Anderson, K., Collard, P., King, M. B., Knox, R. *Lancet*, 1952, ii, 843; Joiner, C. L., MacLean, K. S., Carroll, J. D., Marsh, K., Collard, P., Knox, R. *Ibid*, 1954, ii, 663.
2. Henry, A. K. Exposures of Long Bones and Other Surgical Methods. Bristol. 1927.

Jackson, it has had small currency: lesions of the vertebral artery are rare in themselves and seldom reach base if they occur.

Schools of Surgery,
Royal College of Surgeons in Ireland,
Dublin. ARNOLD K. HENRY.

HEAT TO THE HEART

SIR,—Prior to the late war, I gave courses of short-wave diathermy to about a score of sufferers from coronary ischæmia, applying the heat over the heart area. The majority were patients with angina of effort or angina decubitus, but a few had had coronary thromboses. In such a small and uncontrolled series, and because I did not withhold other therapeutic measures, it was impossible to assess with any accuracy the influence of such treatment; but clinically most of the patients remarked an improvement in their condition and a diminution in the number of anginal attacks. Nor were any ill effects observed, which, in these days of powerful dilators, hypotensives, ganglion-blocking agents, ion-exchange resins, and anticoagulants, is perhaps something.

London, W.1. S. CHARLES LEWSEN.

"TAKE A COUPLE OF FAT VIPERS"

SIR,—If any compounder does not make use of the entrails and viscera of his vipers or if he has a surplus of these useful creatures (alive or dead) I shall be glad to receive them. They should be used soon after death. Decay is rapid and its results offensive.

Public Health Laboratory,
Musgrove Park Hospital,
Taunton. J. A. BOYCOTT.

A WORD WANTED

SIR,—With regard to this discussion,[1] I suggest that, if we do not accept the word "prospective," on the ground that it is now used in a rather different sense to the one we want, we borrow from the Greek language the corresponding word, which is in everyday use. That word is προοπτικός = proöptic. It means "I see from the beginning the future evolution and happenings." A gifted politician is προοπτικός (a); a good clinician has προοπτική (n); and a good researcher must be proöptic and not retrospective only.

Toronto, Ontario, Canada. L. G. POLYMENAKOS.

CANCER OF THE LARYNX

SIR,—I am well aware that the figures quoted from the Registrar-General's statistics cannot be regarded as altogether accurate, and I know that it is impossible to make allowances for the results of successful treatment when one studies these figures. It would be most interesting to have the views of throat surgeons on this point, for it might convey some sort of idea concerning the degree of inaccuracy which arises from neglect to allow for successfully treated cases.

I do not agree that the Registrar-General's figures for death from cancer of the lung accurately reflect its incidence, as Mr. Beales suggests in his letter last week. The condition is still a most difficult one from the diagnostic point of view, and I should estimate that there is still a considerable percentage of error in the figures quoted. One can only say that this error is much less than it was thirty years ago.

Even if improvement in treatment has resulted in a masking of the true figures of carcinoma of the larynx, I feel that there is still a considerable discrepancy for which I cannot find a satisfactory explanation.

London, W.1. JAMES MAXWELL.

1. See *Lancet*, 1954, i, 784, 884, 1244; *Ibid*, 1954, ii, 759, 974, 1020, 1179, 1235, 1286, 1328; *Ibid*, Jan. 1, 1955, p. 48.

TOO MANY ANTIPYRETICS?

SIR,—I use antipyretics in many febrile illnesses because they seem to have a beneficial symptomatic effect. Fever produces symptoms, and many of these minor febrile illnesses can only be treated symptomatically and often this is all that is required.

Dr. Bronsdon (Jan. 29) says: "On more than one occasion I have allowed my own pyrexia to deal with the invading pathogens and it has coped pretty well." It is Dr. Bronsdon's antibodies that deal with the infection, not the pyrexia. Furthermore, there is no reason to suppose that the production of antibodies is interfered with by lowering the temperature with antipyretics (in fact there is evidence for the opposing view).

The most reasonable view is that fever results from a depression of sensitivity of the thermoregulatory centre by circulating toxins, and that this is an incidental reaction of the host to the parasite without survival value. In addition, I do not think that understanding can be increased by interpreting the febrile response teleologically.

Finally, if it can be shown that patients receiving antipyretics take significantly longer to recover than those allowed to enjoy their fever unabated, then this will be important evidence for those who hold that an elevated temperature is beneficial. Meanwhile the use of antipyretics is rational as symptomatic treatment.

London, S.E.2. PETER H. SHERWOOD.

VICARIOUS APPETITE

SIR,—Vicarious appetite is seen most commonly as a behaviour disorder in children, during pregnancy, and in various psychotic states. I have lately seen two patients with this complaint.

CASE 1.—A young Italian man, aged 27, the owner and manager of a café, developed an insatiable desire for chocolate in May, 1949. Simultaneously he lost interest in any other food, and for four months before admission to hospital he ate literally nothing else. He had no dyspepsia, his only other symptoms being lethargy and a little loss of weight. He estimated that he ate about three pounds of chocolate per day during this time, his occupation allowing him this privilege despite rationing. He was examined as an outpatient at another hospital in June, 1949, and "liver dysfunction" was diagnosed. In August, 1949, he became very exhausted and was admitted to this hospital. By this time his appetite, even for chocolate, was beginning to fail.

He was a well-nourished young man, complaining only of a loss of energy and an inordinate desire to eat chocolate. Physical examination of respiratory, cardiovascular, genito-urinary, and central nervous systems was completely negative. A small hard movable mass was found in the epigastrium. Radiography after a barium meal confirmed the presence of a gastric neoplasm. At laparotomy this was found to be inoperable, and he died two months later of secondary spread.

There can be little doubt that this vicarious appetite was based on the presence of a gastric carcinoma.

CASE 2.—A girl, aged 6, with no previous history of illness attended the outpatient department of this hospital in January, 1953. The complaints were principally from her mother, and their vehemence was not surprising. Five months previously the child had started to eat her own clothes. Her appetite for more civilised foods remained normal as far as the mother could judge, but in addition she ate her coats, dresses, gloves, &c. An average meal consisted of about a square foot of convenient clothing. A coat was exhibited showing both sleeves eaten to the elbows and the skirt eaten up to pocket level. The mother was in no doubt about the cloth being actually swallowed and not simply chewed and spat out. She had noticed on several occasions portions of a red coat in the child's fæces.

The child looked healthy. She agreed that she liked to eat her clothes but would add little else. Physical examination was negative. She was charming and intelligent, and good at school; and she had never shown any behaviour disorder previously. Her parents were kindly people of

professional class in happy domestic circumstances until the present upheaval. Six months previously a second child had been born; and the parents, together with the family doctor, had come to the conclusion that the clothes-eating was a form of exhibitionism based on jealousy of the newly arrived baby. I rapidly joined their group and referred the child to a psychiatrist.

Many months later I was again asked to see the child. Treatment had been singularly unrewarding, if not downright detrimental. From eating clothes the child had graduated to eating matches, paper, sticks, and coal. The logical grouping of her latest articles of diet gave me an uneasy feeling that she was throwing out clues to some deep-seated psychological disorder, the nature of which was quite beyond me. She remained, as before, in perfect health. There was no dyspepsia or vomiting, and no other symptom of alimentary upset.

The parents were at their wits' end. The child was by this time unacceptable at school because of the habits she allegedly taught others with latent similar appetites. In addition her wardrobe was deplorable.

About a month after this unhelpful consultation, I heard an elderly lady describe similar symptoms in a litter of Spaniel pups. In her mind there was no shadow of doubt about their cause—they needed worming. I wrote to the child's doctor and suggested that perhaps he might see whether she had a threadworm infestation. This he did, and she had.

He treated her carefully, and in a few weeks she was eating nothing more abnormal than green-iced cakes and bubblegum.

Law Hospital, Carluke, Lanarkshire. A. MUIR.

MENTAL HEALTH AND PUBLIC HEALTH

SIR,—Dr. Cameron, writing in your issue of Jan. 29, considers that the health visitor is by her vocation and early training as a sick nurse in general wards quite unsuited for the tasks of working in the mental-health service.

I should like to ask him if the nurse, why not the doctor? Is there any medical psychiatrist who prior to qualification has not had similar experiences of the sick in general wards to the nurse's—or does he prefer the non-medical psychiatrist?

The proof of the pudding is in the eating and in Cardiff for some years now they have had a health visitor specialising in mental health—"Care and After Care." She acts as liaison officer between the mental-health services, the general practitioners, and the Cardiff city health visitors, all of whom are also interested in mental health. The whole scheme works to the entire satisfaction of the Cardiff psychiatrists, who also gave it their prior approval.

J. GREENWOOD WILSON
Medical Officer of Health, Port of London; formerly Medical Officer of Health, City and Port of Cardiff.
Guildhall, E.C.2.

SIR,—Allow me to support Dr. Cameron's plea for research into the problems of prevention of mental illness. We are not likely to get far with measures of prevention until we know something more concerning the causes of mental illness. What are the causes of schizophrenic diseases, which occupy nearly half of the beds in mental hospitals? Of the manic-depressive psychoses? Of the psychoneuroses? Of conflicting hypotheses there are many, as Dr. Cameron points out. There are the theories of prenatal, infantile, and childhood conditioning; of environmental stress; of the influence of social cultures. When it is pointed out that not all persons who undergo the (alleged) hurtful experiences become mentally ill, one falls back on "constitutional predisposition." But what this really is, or how it can be eradicated, we do not know. It is obvious that a considerable amount of research will have to be undertaken before we can talk with confidence concerning the ætiology of mental illness; and until we are able to do this, we cannot organise prevention in a scientific manner.

This brings me to the important point I wish to make. It is vitally urgent that large sums of money should be allocated for research in psychiatry. The sum allotted at present is insignificant in relation to the complicated problems to be solved. Very few of the hundred-odd mental hospitals in England are given funds for research; as far as medical personnel is concerned, they are understaffed and can barely cope with the programmes of therapy, let alone research. May I here quote the annual report of the Mental Health Research Fund:

"Clinical research, though not without growing points, lags far behind clinical research in general medicine. Research specifically directed to mental health, whether in the clinical or the fundamental field, is far smaller in volume than that directed to problems of general medicine; and this reflects the fact that it still interests and attracts far fewer of the best brains."

Until funds are forthcoming, and until the fruits of research are gathered, we must resign ourselves to half the hospital beds in the country being occupied by mental cases.

Park Prewett Hospital, Basingstoke. I. ATKIN
Physician-Superintendent.

TREATMENT OF IMPETIGO

SIR,—The Ministry of Health [1] has pointed out that the general use of aureomycin and terramycin, either systemically or locally, in minor staphylococcal infections will foster the emergence and spread of resistant strains. Stewart [2] and other investigators have emphasised the dangers of resistance or sensitisation through the topical use of important antibiotics which are administered systemically; while Russell [3] has stated that the topical application of aureomycin or terramycin may induce infection due to gram-negative organisms, especially proteus.

In the past four months I have treated about 30 cases of impetigo with 'Graneodin' ointment, each gramme of which contains 2·5 mg. of neomycin and 0·25 mg. of gramicidin.

Neomycin is highly active against many gram-positive and gram-negative bacteria, while gramicidin increases the activity of the product against streptococci and other gram-positive organisms. Neither antibiotic is normally given systemically, although neomycin may be given by mouth for intestinal infections because it is not absorbed to any appreciable extent. When given parenterally, neomycin has some nephrotoxic and ototoxic effects; gramicidin is too toxic for routine injection and is absorbed to only a very limited extent from the gastro-intestinal tract. The topical use of this combination does not, therefore, involve risks of resistance or sensitisation to antibiotics which are required for systemic administration, and its activity embraces many gram-negative organisms as well as gram-positive bacteria.

No case of sensitisation to graneodin ointment was encountered in this trial. Leslie and Harvey [4] also recorded no sensitisation in their investigation, which embraced 105 cases of various skin infections. The duration of therapy in my series, however, was short; the majority of cases required four or five days' treatment, and only 2 cases were treated for as long as eight days. No other agent was used.

All the patients were children, except for 3 young adults. The patient (or in the case of a child the parent) was instructed to rub the ointment well into the skin lesion three times daily and not to apply anything else. In very young children, the lesions were covered with gauze and bandages.

Most of the cases were fairly early ones, and rapid response was the rule, the majority showing healing on the third or fourth day. There were no relapses, but a few cases required a second, short, course of treatment where two or more members of a family had impetigo and reinfection occurred.

1. See *Lancet*, 1954, ii, 820.
2. Stewart, G. T. *Ibid*, p. 1175.
3. Russell, B. *Brit. med. J.* 1954, ii, 1046.
4. Leslie, G., Harvey, G. *Brit. J. Derm.* 1954, **66**, 112.

Although I have tried most of the agents recommended for the treatment of impetigo, none has proved as effective as graneodin ointment.

Walton, Liverpool. J. McMASTER.

PERFORATED PEPTIC ULCERS

SIR,—In your issue of Jan. 22 Mr. Moore gives an excellent account of his successful results in the treatment of acutely perforated peptic ulcers. One wonders, however, whether he is justified on his own findings in reaching some of the conclusions he did. For example, he attributes the satisfactory results in three very seriously ill patients with perforations to operation, despite the fact that it is likely that the energetic resuscitative measures employed played at least as much a part as the operation, and he uses this as an argument in favour of operative treatment for seriously ill cases. It is possible that his three patients who died on the conservative management were also treated by energetic resuscitative measures, but there is no mention of this in his paper. If they were not so treated then surely it is rather unfair to blame their deaths on conservative management.

The conclusions he draws from his table IV are much too general for the type of data he has assembled there. Each section of the table shows a very variable mortality. In the first part this ranges from no deaths to a 20% mortality; in the second, it ranges from 1·8 to 17·5%; while in the third, it ranges from 0 to 17%. The various series included under each of the three headings certainly do not appear to be identical, nor are their ages mentioned. In view of this great variability, it would be unwise to conclude, as Mr. Moore does, that whichever method of treatment is used the results are apparently much the same.

Department of Surgery,
Medical School,
Dundee. JOHN GRIEVE.

METHYLPENTYNOL AND HABIT FORMATION

SIR,—Two recent articles in your columns have again dealt with methylpentynol,[1 2] and its use—not only as prescribed by a doctor but also "unofficially"—seems to have become more widespread. It has frequently been described in the popular press as "not habit-forming,"[3] and whilst our own earlier experiences with this drug did not show any evidence to the contrary,[4 5] this happy state of affairs has unfortunately not continued for long.

Recent experience with psychopathic and neurotic alcoholics has, not unexpectedly, shown habit formation and addiction with the use of methylpentynol to be a definite possibility in the case of unstable personalities. We now know of at least six alcoholics who took large quantities of this drug. Two of these developed a confusional and highly emotional state, with slurring of speech and ataxic gait, after taking up to 20 capsules for two or three days, while others (not personally observed) seem to have taken equally large numbers for a somewhat longer period. All these alcoholics had, as far as we know, also been in the habit of taking other hypnotic drugs to excess.

In this connection it may perhaps be mentioned that a number of outpatients stated that methylpentynol seemed to increase considerably the effect of alcohol when taken together, an effect resembling the synergistic action of alcohol and barbiturates.[6] The possible synergism between barbiturates and methylpentynol,[7–9] and the fact that a death after taking 18 to 24 capsules of the drug has been reported in America,[10] should also be kept in mind when considering the danger of unrestricted self-medication by the public.

Apart from these drawbacks, in our experience methylpentynol has proved a satisfactory drug, in normal amounts non-toxic both on clinical and laboratory investigations. As far as alcoholics are concerned, most of whom appear to be unable "to handle any kind of drug in moderation,"[11] methylpentynol, on balance, still appears to be preferable to the older hypnotics, where a hypnotic is necessary. Its use, however, should be discontinued (and this can be done fairly easily) as soon as possible after the first few days.

It is regrettable that members of the public should apparently still be able to purchase large quantities of this drug so easily without a prescription, in spite of the advice of the Council of the Pharmaceutical Society that it should be supplied only on a prescription,[12] as this may possibly bring a valuable drug into disrepute through excessive and indiscriminate use.

Warlingham Park Hospital,
Surrey. M. M. GLATT.

BARBITURATE POISONING

SIR,—The treatment of acute barbiturate poisoning remains highly controversial, with the advocates of the use of analeptics on the one hand,[13] and of a more conservative approach on the other.[14 15] Having had some experience of both approaches I have become converted to the latter.

Dr. Lurie,[16] who has found corticotrophin of value in this disorder, writes: "The action of corticotrophin in suppressing pathological reactions is still largely unexplained, and we are certainly not in a position to offer any explanation of its rôle in barbiturate poisoning."

Einhauser[17] showed in rats that barbiturates acted initially on the vasomotor centre causing early vascular collapse, and later acted directly on the peripheral vessels causing increased vascular permeability and collapse. Experimentally Menkin[18] and Benditt et al.[19] found that vascular permeability is decreased by the administration of corticotrophin. In patients with thrombocytopenic purpura Faloon et al.[20] found a temporary but consistent increase in capillary resistance during treatment with corticotrophin.

Presumably this temporary reduction of vascular permeability by corticotrophin might account for the striking results obtained by Dr. Lurie in barbiturate coma.

Royal Infirmary,
Manchester. IAN A. KELLOCK.

ISOBEL CRIPPS CENTRE

Mr. Charles Neil writes:

In answer to Dr. Barlow I must point out that the "onus of suspecting," or "not suspecting" the presence of illness is not on me, since the *only* cases that are taken without medical care are those who come to improve some skill, such as the violinist, the dancer, or the golfer. I maintain that we take every safeguard that can be taken, like the physiotherapists with whom we enjoy a friendly and coöperative relationship.

When our methods and our institute have become more securely established, there will then be no need to advertise, as is now so in the medical profession, but was not always so. In the mean time, our present "intensive advertising campaign" consists of one advertisement a fortnight in the "lectures and specialised training" column of the *New Statesman*, and great care is taken to see that this does not mislead, or claim too much. Dr. Barlow had to go back to 1950 to find one which contained a doubtful phrase, and which I had stopped as soon as my attention was drawn to it.

1. Bourne, G. *Lancet*, 1954, ii, 522.
2. Trotter, P. A. *Ibid*, p. 1302.
3. *Evening News*, July 14, 1954.
4. *Brit. med. J.* 1954, i, 760.
5. *Lancet*, 1954, ii, 143.
6. *Brit. med. J.* 1953, i, 1269.
7. Gialdroni, C. Grassi, C.. *Atti Soc. Lombarda Sci. med. biol.* 1952, **7**, 90.
8. Zoboli, P. *Boll. Soc. ital. Biol. sper.* 1953, **29**, 111.
9. *Lancet*, 1954, ii, 1332.
10. Cares, R. M., Newman, B., Manceri, J. C. *Amer. J. clin. Path.* 1953, **23**, 129.
11. Sedatives and the Alcoholic. New York, 1952; p. 8.
12. *Pharm. J.* July 31, 1954, p. 80.
13. Koppanyi, T., Fazekas, J. F. *Amer. J. med. Sci.* 1950, **220**, 559.
14. Nilsson, E. *Acta med. scand.* 1951, suppl. 253.
15. Locket, S., Angus, J. *Lancet*, 1952, i, 580.
16. Lurie, I. *Ibid*, 1954, ii, 601.
17. Einhauser, M. *Klin. Wschr.* 1939, **18**, 423.
18. Menkin, V. *Proc. Soc. exp. Biol., N.Y.* 1951, **77**, 592.
19. Benditt, E. P., Schiller, S., Wong, H., Dorfman, A. *Ibid*, 1950, **75**, 782.
20. Faloon, W. W., Greene, R. W., Lozner, E. L. *Amer. J. Med.* 1952, **13**, 12.

Obituary

EDWARD MELLANBY

G.B.E., K.C.B., M.A., M.D., Sc.D. Camb., D.Sc., LL.D., F.R.C.P., F.R.S.

FOR the sixteen years 1933–49 Sir Edward Mellanby held a commanding position in British medicine as secretary of the Medical Research Council. This period was one of rapid development both in science and in the machinery of science; and if, as we believe, conditions for medical investigation in this country are still exceptionally good, no small credit should go to Mellanby for being so often right in his opinions and his actions. In some ways he was not well cast as an administrator; for he did not always appear either judicial or receptive, and he could be careless of other people's feelings. But, against this, he was a man of unusual vigour and unusual sense, and himself an investigator who never ceased investigating—and usually got results. He took and held his official post because he saw how necessary it is that, in so far as scientific work is organised at all, it shall be organised by those who understand it. But he also used his great influence to ensure, so far as he could, that the knowledge gained by such work was applied to the public benefit. As the Medical Research Council said after the war, "the results of feeding the population during the blockade have been a triumph for those who had been engaged in nutritional research for the past thirty years"; and both as investigator and Government adviser part of this triumph was Mellanby's.

[Walter Stoneman

The son of John Mellanby, a shipbuilder in West Hartlepool, he was one of four brilliant brothers, of whom one died young and the others were A. L. Mellanby, professor of engineering at Glasgow, and John Mellanby, F.R.S., professor of physiology at St. Thomas's Hospital. Edward was an athlete and carried all before him at his school at Barnard Castle; but he deliberately gave up games on going to Cambridge, where he had won a scholarship at Emmanuel College. At Cambridge he worked as a research student even before starting clinical work at St. Thomas's, and he published a paper on creatine and creatinine in the *Journal of Physiology* before qualifying in 1910. Thereafter he was demonstrator in physiology at St. Thomas's, held a Beit fellowship, and in 1913 joined the staff of King's College for Women as lecturer on physiology. His interests at this time included the chemical study of cyclical vomiting and the metabolism of lactating women; and while at King's College he recorded experimental work on diarrhœa and vomiting in children, and produced in 1919 for the Medical Research Committee (as it then was) a major report on experiments on the absorption of alcohol, undertaken for the board then controlling the liquor trade. His most fruitful inquiries had begun, however, when in 1914, on the advice of Gowland Hopkins, the Medical Research Committee gave him a grant to study rickets. From his comprehensive experiments on puppies he was able to provide in 1918 the first conclusive proof of the existence of an antirachitic vitamin—and also, incidentally, to warn clinicians against looking at accessory food factors separately from other elements of the diet and from the general metabolism.[1] Two M.R.C. special reports on rickets followed, the first in 1921 and the second in 1925. By this time he was further exploring the tendency of cereals to inhibit the formation of bone, and was arousing opposition by his comments on oatmeal; and later on, in 1937, he showed that the rachitogenic substance in cereals was phytic acid, whose action had to be neutralised by a sufficiency of calcium in the diet.

1. *Lancet* 1919, i, 407.

From his chair of physiology in London, Mellanby moved in 1920 to Sheffield where he became professor of pharmacology and physician to the Royal Infirmary. Here he was clinician as well as teacher and investigator, and it was his custom to lecture at 9 A.M., see his patients in the wards, and then spend the rest of the day at the field laboratory which had been built for him. (The story is told that three months after the grant for this laboratory had been approved, he was asked whether he would not soon be submitting plans. To which he replied that he had already been at work in the new laboratory for three weeks.) In 1914 he had married May Tweedy, and at Sheffield there was good scope for those related yet independent investigations which made the scientific symbiosis of "the Mellanbys" so happy and so successful.

In 1931 he was made a member of the Medical Research Council, and two years later he was appointed secretary. At this time the foundation of the council's activities had been laid and its position as an important factor in the scientific life of the country had been established by the work of the late Sir Walter Fletcher; but the organisation nevertheless remained a small one. That it would expand so greatly during Mellanby's period of office and under his guidance was hardly expected at the time of his appointment. He was then known as a devoted research-worker, of great scientific distinction in the field of nutrition, and it was a matter for some surprise that he was willing to leave his laboratory for an administrative post.

In point of fact of course Mellanby never did allow himself to lose direct contact with laboratory work, and this was characteristic. In the early days of his secretaryship he kept experimental work going by weekend journeys to his old laboratory at Sheffield; after the building of the Nutrition Laboratory at Mill Hill most of his weekends were spent there—even during the war when the burdens and responsibilities of his official work were more than most men would care to carry as their entire occupation. Nor was his laboratory work during this period by any means a nominal occupation: his research on the effects of vitamin A on bone growth gave him the material for an impressive Croonian lecture to the Royal Society, while his discovery in 1947 that the current treatment of flour with agene produces a substance toxic to dogs has already done much to draw attention to the whole question of treatment of foods with chemicals.

In Sir Charles Harington's words:

"It was this single-minded devotion to the cause of scientific research in medicine, particularly research in the laboratory, that determined the character of Mellanby's work as secretary of the Medical Research Council. It made him always insistent on the principle that the interests of the research-worker must come before those of the organisation. He was shrewd in administrative affairs and he showed vision in guiding the council into new developments; moreover his strength of character enabled him to assume heavy responsibilities without complaint. On the other hand he never gave the impression of being happy in administrative work; such work was a means to an end and was tolerable only in so far as it helped the advance of scientific work, and it could at times be the cause of impatience; nor was it everyone who realised that this impatience was on occasion partly assumed with the deliberate intention of provoking a vigorous and uninhibited reaction and of so getting rapidly to the root of the matter.

"This is not to say that Mellanby did not enjoy, as would any man of strong character with confidence in his own judgment, the power that his position gave him to influence the development of medical research and its applications in many fields of human endeavour both in peace and in war; he certainly did derive satisfaction from the growing impor-

tance of his job; but what gave him unalloyed joy was the manifestation of its success in new scientific discoveries to which he could feel that the council's work had contributed.

"All this meant that whilst over administrative matters there might be barriers to be overcome with Mellanby, there was never any need for difficulty when the subject for discussion was a purely scientific one. Indeed, any research-worker who was sincerely trying to do a good job could be sure of Mellanby's patience, sympathy, and encouragement, and there are many in the service of the Medical Research Council and outside it who owe him much."

One of his juniors, C. M. F., writes:

"Mellanby never tired of declaring his unfitness for the job of secretary of the M.R.C.: but he really knew that he was well fitted for it, as the pleased twinkle in his eyes declared if you asked him how it was that the whole show ran so well and contributed so much to medical science under his guidance. The secret was that he had an unerring sense of the directions in which progress could be made and remarkable judgment of the men likely to succeed in each field of endeavour. Having chosen his man he provided constant if critical support, but he never directed or constrained. A discussion with him was always profitable, but often in unexpected ways. He might not answer the problem which you brought to him, but would suggest a new approach to some neighbouring problem which had not till then seemed relevant. And always there was the stimulus to *discover*. He classified scientists as 'discoverers' and the rest. He was remarkably outspoken, often almost alarmingly so, in his comments upon those whose work he considered valueless; but if events proved him wrong, he was always generous in admitting it.

"He was at his best during weekends at the Nutrition Laboratories at Mill Hill. It was incredible that he should be able to dismiss all his administrative burden each Friday evening and then settle down to his own research as if there had been no interruption. Part of the secret no doubt lay in the companionship given to him by his wife whose scientific interests lay so close to his own. The fire of the scientist's curiosity lit up his whole great frame as he took one round to see his animals and talked of his experimental plans or of the benefits he saw accruing to mankind from the application of his work.

"There was no question of retirement after he left the secretaryship of the M.R.C. There were more discoveries to be made—' without any elaborate apparatus,' he would insist—and he went on making them to the very end. His example and his memory will continue to inspire all those of us who knew him, respected him for all that he was and did, and, though he would scarcely have believed it, had a real affection for him."

In his Harveian oration to the Royal College of Physicians,[2] Mellanby sought first to show that though "the words control and bureaucracy have a disagreeable sound particularly in the ears of those searching after truth by experiment," State control of medical research can be compatible with freedom to the investigator. He also set out the policy which the council was then unfolding and which has since developed so much further—including the grafting of its own research units on to various hospitals, universities, and other institutions, to the considerable benefit of both graft and stock. In discussing such control he admitted that mistakes in appraisal are inevitable: "relatively poor workers may stand, especially in the eyes of their near colleagues, on a pedestal of distinction and, much more serious, the first-class discoverer and his work may go unrecognised." But he felt that the constitution of the council was a substantial safeguard against error. Elsewhere [3] he wrote: "The test of the acceptability of a discovery depends on whether it is true and not whether it seems sensible or even whether it can be verified by the statistician." Always he pressed the need for knowing more, pointing out that any State scheme affecting health—however large, however costly, however well administered—can be only as effective as medical knowledge at the time allows it to be.[4]

2. *Ibid*, 1938, ii, 929.
3. *Brit. med. J.* 1949, i, 921.
4. *Lancet*, 1939, i, 1063.

After his retirement from the M.R.C. he paid visits to India and to Australia, where his advice on the promotion of research was eagerly sought and warmly welcomed. In the international field he was well known as chairman of the International Conferences for Standardisation of Vitamins (1931, 1934, and 1949) and of the International Technical Commission on Nutrition. He was also for many years chairman of the Colonial Medical Research Committee.

Mellanby's almost innumerable distinctions included the Bisset Hawkins, Moxon, and Baly medals of the Royal College of Physicians, to which he was elected in 1928, and the Royal and Buchanan medals of the Royal Society, of which he became a fellow in 1925. He was an honorary fellow of the Royal College of Surgeons of Edinburgh, and he was granted honorary degrees by the Universities of Oxford, Cambridge, Sheffield, Birmingham, St. Andrews, Glasgow, Belfast, Melbourne, Adelaide, Witwatersrand, Chicago, and Oslo. He was Fullerian professor of physiology at the Royal Institution from 1935 to 1937, and was made an honorary fellow of Emmanuel College in 1946. In 1937 he was created K.C.B., and in 1948 G.B.E.

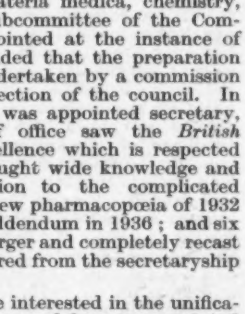
Sir Edward Mellanby died last Sunday, aged 70. He had been engaged in experiments an hour previously.

CHARLES HERBERT HAMPSHIRE

C.M.G., M.B. B.Sc. Lond., F.R.I.C., F.P.S.

As we announced last week Dr. C. H. Hampshire, secretary of the British Pharmacopœia Commission from 1929 to 1950, died in London on Jan. 25 at the age of 69.

He was the youngest child of a large family in Ilkley, and from the local grammar school was apprenticed to a pharmacist in his native town. In 1905 he entered the School of Pharmacy of the Pharmaceutical Society with a Jacob Bell scholarship, and later, as a qualified pharmacist with most of the prize medals of his year, he joined the staff and proceeded to a degree in chemistry and a fellowship of the Institute of Chemistry. In 1914 he turned from a teaching career to take the position of chief pharmacist at University College Hospital; and, with his new responsibilities mastered and his department organised, he determined to qualify in medicine, not with the intention of practising but the better to fit hims lf for the expansion of his hospital duties.



[Elliott & Fry

A new direction in his career came in 1929. The General Medical Council, in accordance with their obligations under the Medical Acts, had published the fifth edition of the *British Pharmacopœia* in 1914, and by the mid-1920s it was clear that the organisation of the detailed work of revision of the pharmacopœia required strengthening in order to keep pace with the advances in materia medica, chemistry, and pharmacy. In 1928 a subcommittee of the Committee of Civil Research, appointed at the instance of the Lord President, recommended that the preparation of future editions should be undertaken by a commission working under the general direction of the council. In the following year Hampshire was appointed secretary, and his twenty-one years of office saw the *British Pharmacopœia* achieve an excellence which is respected throughout the world. He brought wide knowledge and unstinted energy and devotion to the complicated work of the commission. The new pharmacopœia of 1932 was followed by a substantial addendum in 1936; and six war-time addenda preceded a larger and completely recast pharmacopœia in 1948. He retired from the secretaryship of the commission in 1950.

Early in his career he became interested in the unification of national pharmacopœias, and he was appointed chairman of the Technical Committee of Pharmacopœial

Experts set up in 1937 by the League of Nations. In 1947 the World Health Organisation re-established work on the preparation of an *International Pharmacopœia*, and Hampshire was again elected chairman of the expert committee and presided over many sessions at Geneva and (in 1950) in the United States. In 1951 he was able to present the first volume of the *International Pharmacopœia* to the assembly of the Fédération Internationale Pharmaceutique in Rome. His enthusiasm for the work remained unabated, and to the end of his life he was busy on the preparation of further volumes.

When through the years he turned from his main business of pharmacopœias, the hobbies he pursued constituted almost a career in other branches of pharmacy and medicine. For ten years he served as an honorary secretary of the British Pharmaceutical Conference, and he was chairman from 1932 to 1934. He was editor of the *Quarterly Journal of Pharmacy and Pharmacology* from its inception in 1928 and continued in office when it became a monthly publication in 1949. He had planned to retire next month on reaching his 70th birthday. He was the author of numerous papers, mainly on aspects of pharmaceutical chemistry. For many years he was a member of the board of examiners of the Pharmaceutical Society and of the Royal Institute of Chemistry, and until recently he was on the Board of Studies in Pharmacy of the University of London. In 1949 he was appointed C.M.G.

There was a certain Northern toughness in Hampshire's character, amounting sometimes almost to an aggressive stubbornness, which he showed in the pursuit of the causes he had at heart. His skill and devotion to his chosen work earned the respect of medical men and pharmacists in many countries, and he will be much missed not only in London but also in Geneva. The following tribute comes from Prof. J. A. Gunn:

When appointed secretary to the commission in 1929 Dr. Hampshire soon proved to be ideally equipped and endowed for the varied kinds of work involved in the compilation of a pharmacopœia. The current *B.P. 1914* was hopelessly out of date; as was revealed by the large number of new drugs and preparations introduced into, and the even larger number of useless or redundant drugs deleted from, the *B.P.1932*. Hampshire tackled his side of the work with unflagging zeal. The work was congenial to him; his previous distinguished career had given him a wide knowledge and practical experience of pharmaceutical science and he also had medical qualifications: when, under a reconstituted commission, the work of preparing a second pharmacopœia was begun, his previous experience was invaluable in facilitating the smooth running of the work of the commission, and he fortunately remained in office until after the publication, much delayed owing to the war, of the *B.P. 1948*.

I was associated with him continuously during the long period of preparation of both pharmacopœias, more closely during the last ten years when I acted as chairman of the commission. The work was especially difficult during the war period, when numerous addenda to the *B.P. 1932* had to be published to keep the pharmacopœia up to date and to provide substitutes for important drugs no longer available. Unforeseen stumbling-blocks cropped up. The General Medical Council premises in Hallam Street were bombed and many pharmacopœia records were destroyed. The commission had to migrate to temporary and less convenient quarters. It was even difficult sometimes to get the requisite paper and binding to publish the addenda. For some time, when under the conditions meetings of the full commission had to be limited in number, urgent decisions were often left to the chairman and secretary with power to consult individual members of the commission as seemed necessary. I then made frequent journeys to London for personal consultations with Hampshire. In this way I got to know him intimately and acquired an increasing admiration for his abilities as well as a lasting affection for him as a man. No differences of opinion (and there were bound to be some) ever left any ill-feeling or interrupted our friendship. The strenuous, unremitting, and sometimes frustrating work of the war period impaired Hampshire's health, and I think he never quite recovered.

Only those who have had pharmacopœial experience can understand the vast amount of meticulous work that goes to the making of a pharmacopœia. The standard for a single physical property of a drug may involve collection of data from manufacturers and from academic and private pharmaceutical laboratories, checking the statements in the commission's own laboratory, and discussion of the data by an appropriate committee and finally by the full commission; but all that appears in the final pharmacopœia may be "Melting point, 164·5° to 166·5°." It is the same with every detail in a monograph in a volume of over 800 pages.

In all this work Hampshire was the catalyst. He had in full measure the requisite patience, learning, and temperament. Apart from his many other activities and achievements, for his pharmacopœial work alone he richly deserves to be held by the medical profession in honoured memory.

Dr. Hampshire married, in 1915, Miss Grace Mary Taylor. She died a year ago and he is survived by his daughter.

FRANCIS HARPER TREHERNE

K.C.M.G., F.R.C.S.E.

Major-General Sir Francis Treherne, who died on Jan. 30 at his home at Woodbridge, Suffolk, at the age of 96, took part in the Egyptian war of 1882 and he ended his long and honourable record of active service as director of medical services to the Mesopotamian Field Force in the 1914–18 war.

He studied medicine at St. Bartholomew's Hospital, qualifying in 1881. He began his service in Egypt in 1882 and took part in the campaigns of the Sudan and the Nile in 1884. The same year he took the F.R.C.S.E. In 1893 he was posted to India as surgeon to the commander-in-chief. From 1899 to 1901 he again saw active service in the South African war, and he was present at the battle of Lombard's Kop which led to the defence of Ladysmith. For his services he was mentioned in despatches. He was promoted lieut.-colonel in 1902. Later he was posted once more to India and served on the North West Frontier in 1908. In 1911 he became A.D.M.S. India, and the following year he was appointed honorary surgeon to the Viceroy.

At the beginning of the 1914–18 war he served at first with the British Expeditionary Force. With the rank of surgeon-general he was in 1915 appointed D.M.S. to the Third Army and received the honour of C.M.G. In 1916 he took up the appointment of D.M.S. to the Mesopotamian Force. For his services at the actions of Kut, Diala, and the capture of Bagdad he was twice mentioned in despatches and he was promoted K.C.M.G. In 1917 he returned to this country and served as D.D.M.S. London district and as inspector of medical services before he retired in 1919 with the rank of major-general.

By his first marriage to Meliora Farmar, who died in 1891, he leaves two sons. In 1900 he married Norah, daughter of General Sir Frank Turner, and there was a daughter by this marriage.

JAMES HARDIE NEIL

C.B.E., D.S.O., F.R.A.C.S., F.A.C.S.

Mr. J. H. Neil, who died in Auckland on Jan. 28, was a distinguished aural surgeon and a well-known public figure in New Zealand.

He was born in 1875, and studied medicine at Otago University. His painstaking dissections of human and animal lungs, and his early mastery of the technique of bronchoscopy, established him as a pioneer in his chosen field of otolaryngology. For many years he was aural surgeon to Auckland Hospital and to Mater Misericordiæ Hospital, Auckland. His textbook, *Ear, Nose and Throat Nursing*, reached its fourth edition in 1948.

D. R. writes: "Both in peace and war Hardie Neil served his country in many capacities. During the South African war he was surgeon captain to the 4th New Zealand Mounted Rifles, and in the 1914–18 war he commanded No. 3 New Zealand Rifle Brigade Field Ambulance. In the second world war he was appointed deputy director of civil defence for the Auckland region. He held office as president both of the Auckland division of the British Medical Association and of the Pan-Pacific Surgical Association; and at the time of his death he was president of the New Zealand League for the Hard of Hearing, which he had helped to found.

"He will be affectionately remembered by his colleagues in many walks of life—medical, civic, and military."

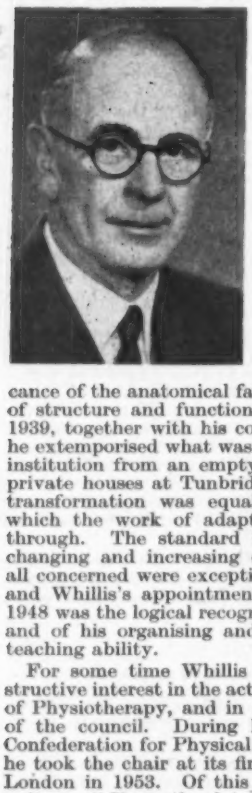
Mr. Hardie Neil married Miss Mary Elizabeth Coates; she survives him, with four daughters, and a son who practises his father's specialty.

JAMES WHILLIS

M.D., M.S. Durh., F.R.C.S.

As one of the editors of *Gray's Anatomy* Professor Whillis was accorded respect by medical students all over the English-speaking world. By the smaller, but ever growing, number of his own students at Guy's Hospital he was also accorded affection and trust.

He was born at Newcastle upon Tyne in 1900, and was educated at Carlisle Grammar School. In 1922 he graduated M.B. with first-class honours at the University of Durham. The same year he was appointed demonstrator of anatomy in the university, and later he became lecturer. While holding this appointment he proceeded to the higher degrees of M.S. in 1925 and M.D. in 1930. Two years later he took the F.R.C.S.



In 1935 he came to London to take up the readership in anatomy at Guy's Hospital. His chief, Prof. T. B. Johnston, soon drew him into the constant and exacting work of preparing successive editions of *Gray*, and for the last four editions Whillis acted as a co-editor. The first edition of his own textbook, *Elementary Anatomy and Physiology*, appeared in 1938. In it he effectively introduced the student, while still at the outset of his studies, to the real significance of the anatomical facts and to the interdependence of structure and function. At the outbreak of war in 1939, together with his colleagues on the staff of Guy's, he extemporised what was in fact a residential university institution from an empty nursing-home and four large private houses at Tunbridge Wells. The success of this transformation was equalled only by the speed with which the work of adaption was planned and carried through. The standard maintained under continually changing and increasing difficulties made it clear that all concerned were exceptionally competent and reliable, and Whillis's appointment to the chair of anatomy in 1948 was the logical recognition of his share in this work, and of his organising and administrative capacity and teaching ability.

For some time Whillis had taken a lively and constructive interest in the activities of the Chartered Society of Physiotherapy, and in 1950 he was elected chairman of the council. During his term of office the World Confederation for Physical Therapy was inaugurated, and he took the chair at its first congress which was held in London in 1953. Of this side of his work W. S. C. C. writes: "Since the late war the society had grown enormously both in the public and professional estimation, and had begun to wish for more specific recognition in the academic field. As chairman Whillis brought to this project an almost boyish enthusiasm, and his personal influence can be seen especially in the revised examination syllabuses of the society. His chairmanship provided him with one of his major interests, and his enforced retirement last year, as the result of his illness, was a great grief to him. His cheerful dynamic presence will be much missed, not only in the chartered society but among all those concerned with the future activity and status of the ancillary medical professions."

T. B. J. writes: "Whillis was especially interested in the anatomy of the living subject and he had done much work, not all of which has been published, in analysing the movements concerned with swallowing and with speech production. He was anxious to retain his clinical interests, and he was a frequent and welcome visitor to Stoke Mandeville Hospital, and to East Grinstead. Latterly he had been much preoccupied by the study of proprioception and the possibilities it offered for practical application, and he had succeeded in showing that a prosthesis can be operated by the myo-electric currents produced by contracting muscles. This apparatus was demonstrated for him by his colleagues at the summer meeting of the British Orthopædic Association in 1954. As a teacher he was intensely practical in his approach, always stressing the functional aspects of his subject, and, as one result, he had no difficulty in retaining the interest and attention of his students, who were also deeply and permanently impressed by the skilful draftsmanship with which he illustrated his lectures from time to time. He was a great worker and a man of many interests. He had, for instance, a surprisingly good knowledge of antique furniture, and for some years he had acted as the director of the photographic and illustration department at Guy's. In his own department there was always a noticeable atmosphere of friendliness and informality, and these good internal relations extended to all the other departments. His untimely death at the age of 54, on Jan. 27, has robbed English anatomy of one of its most active minds and has come as a serious blow to Guy's."

In 1926 he married Miss Dorothy Margaret Lee. She survives him with one son.

A memorial service for Dr. H. K. Waller will be held in the chapel of the British Hospital for Mothers and Babies, Samuel Street, Woolwich, S.E.18, on Thursday, Feb. 17, at 3 P.M.

Appointments

BOLZ, I. A., M.D. Vienna, D.P.H.: joint M.O., to the London County Council and deputy M.O.H. for Hampstead.

BREWER, D. J., M.B. Lond.: asst. chest physician, Stockton and Hartlepools tuberculosis administrative area.

CANNON, P. G., M.B. St. And., D.P.H.: asst. county M.O. and M.O.H., Beccles, the Bungay, Halesworth, and Leiston urban districts and the Blyth and Wainford rural districts.

DEANS, HILDA A., M.B. Aberd., D.P.H.: asst. M.O.H. (public-health preventive services), Dundee.

LEHANE, NORA M. A., M.B. N.U.I., T.D.D.: asst. school M.O., Rhondda.

MACGREGOR, G. A., M.D. Glasg., D.P.H.: asst. county M.O. for area No. 6 (Crook), and M.O.H. for urban districts of Crook and Willington, Towlaw, and rural district of Weardale, co. Durham.

MACKENZIE, A. C., M.D. Edin., D.P.H.: M.O.H., Shrewsbury.

MARTIN, C. C. D., M.CH. Belf., F.R.C.S.I.: senior casualty officer, Bury and Rossendale Hospitals, Manchester R.H.B.

MILES, T. F., M.R.C.S., F.F.A. R.C.S., D.A.: consultant anæsthetist, Cardiff area and Caerphilly district.

RICHARDS, N. A., M.D. Adelaide, M.R.C.O.G.: part-time consultant obstetrician and gynæcologist, Stafford group, Birmingham R.H.B.

SIMMONS, G. H. A., F.R.C.S.: consultant surgeon, Crumpsall Hospital, Manchester.

THORN, P. A., M.D. Lond., M.R.C.P., D.C.H.: part-time consultant physician, mid-Worcestershire group, Birmingham R.H.B.

TREASURE, E. R., M.B. Wales, F.R.C.S.E.: asst. traumatic surgeon (S.H.M.O.), Morriston Hospital, near Swansea.

WILLIAMS, K. M., M.B. Birm., D.P.H., D.I.H.: principal asst. M.O.H., Westminster City Council and Holborn borough council.

Colonial Service:

CLARKE, G. J., M.R.C.S., D.T.M.&H.: S.M.O., St. Helena.

GRIFFIN, P. N., M.B. Sheff.: M.O., Dominica, Windward Isles.

HALL-CRAGGS, E. C. B., M.B. Camb.: M.O., Uganda.

MOORE, S. R. W., M.B. Belf.: M.O., Sierra Leone.

MURPHY, C. W. E., M.B. Dubl., D.P.H.: special grade M.O. (anæsthetist), Aden.

PURSER, MARGARET J., M.B.: M.O., South Pacific Health Service, Fiji.

RAJCOOMAR, TEKMAN, M.B. Patna, D.T.M.&H.: M.O., Mauritius.

SCHOYERER, R. A. F., M.D.: M.O., Gold Coast.

Births, Marriages, and Deaths

BIRTHS

HALNAN.—On Jan. 30, at University College Hospital, to Margaret (née Booth), wife of Dr. Keith Halnan—a daughter (Susan Mary).

DEATHS

MALCOMSON.—On Jan. 24, Greer Edmund Malcomson, M.D. Lond., M.R.C.P., D.P.H., colonel, I.M.S. retd., of 20, Abbey Road, St. John's Wood, London, N.W.8, age 76.

Notes and News

CONVALESCENT HOME FOR SERVANTS OF THE CROWN

WHEN King Edward VII gave Osborne House to the nation at the time of his coronation it was decided to use it as a convalescent home for officers from the Royal Navy and the Army. Since it was opened, 50 years ago, its scope has extended and it now serves a large group of the servants of the Crown. Today, the following men and women are eligible for admission:

Men.—(*a*) Serving and retired regular officers of the Royal Navy, Army, and Royal Air Force, and officers of the Commonwealth Forces serving in the United Kingdom.
(*b*) Serving officers of the R.N.V.R., Territorial Army, and R.A.F.V.R.
(*c*) Ex-officers—that is, officers who have ever held a temporary commission in the Forces.
(*d*) Established and permanent unestablished members of the Civil Service.
(*e*) Serving members of the Foreign Office and the Colonial Service.
Women.—Serving regular officers of the Forces and members of the Civil Service and Foreign Service.

No charge is made to serving officers and those recommended by the Ministry of Pensions. For others the charge is 10*s.* a day.

Besides the nursing staff, there is a remedial gymnast, an occupational therapist, and a physiotherapist. Emphasis is laid on rehabilitation and there is a hot pool for the treatment of rheumatic diseases, fractures, and poliomyelitis. Strict bed cases are not suitable and no cases of incurable illness, mental illness, or tuberculosis are accepted. Patients are accepted in the early stage of convalescence but must be capable of dressing and looking after themselves. On the other hand, simple surgical dressings can be carried out and dietetic treatment arranged. The average stay is for three weeks. A staff of London consultants visit Osborne each month to advise the house-governor who is also the medical superintendent. For officers serving with the Forces contact is maintained with the Naval, Military, and Air Force hospitals, and consultants of the three Services visit regularly.

In the grounds there is a hostel where wives and relatives can be accommodated while officers are in residence, and there are also a private golf-course, a bathing beach, and facilities for tennis, croquet, sailing, and boating.

Requests for admission should be made to the house-governor and medical superintendent, Osborne House, East Cowes, Isle of Wight.

MEDICAL JOURNAL FOR CENTRAL AFRICA

MEDICAL readers, striving to keep their heads above water in the swelling torrent of medical journals, must often pray for surcease. But, for all that, the foundation of a new journal is sometimes clearly justified—for instance, to form a link between groups with specialised interests, where no other suitable link exists, or to secure publication of work that should be recorded but which otherwise might not be. Both these good reasons underlie the initiation of the *Central African Journal of Medicine*,[1] which has made a brave start this year. An editorial in the January issue remarks on the need to record facts of local interest, both for the information of others in the area and for the benefit of those who come after: "our successors will be interested to learn of our conditions of practice, what the prevalent diseases were, and how we coped with our problems and overcame our difficulties." Moreover, a busy doctor who sees an interesting case may not find it easy to prepare a well-referenced article if he is working far away from a medical library; and there is need for a journal that will consider publishing his collected notes. Again, there is scope for investigation of, and reports on, treatment by "witch-doctors." "Not only will such a study have an anthropological value, but it may provide a new method of treatment." The journal's editorial board is headed by Dr. Michael Gelfand. Profits are to be devoted to founding a library in the proposed medical faculty of the Rhodesia University; and the journal board has provided in its constitution for handing over to an approved medical body within the Federation of Rhodesia and Nyasaland.

1. Published bi-monthly. £2 2*s.* per annum, post-free. All communications should be sent to the Editor, P.O. Box 2073, Salisbury, Southern Rhodesia.

University of Oxford

On Jan. 20 the degree of B.M. was conferred on the following:

W. G. Cowell, Audrey Grumitt, * G. D. H. Lynne-Davies, C. S. K. Ruck, David Severs.

* In absentia.

University of Cambridge

On Jan. 22 the following degrees were conferred:

M.B., B.Chir.—* R. A. Carpenter, * P. A. Eckstein, J. D. Ellis, J. H. C. Hunt, J. B. Pond, C. J. F. Potter, J. T. N. Williams.
M.B.—J. W. Blaxill, L. H. Blonstein, * J. N. Bodger, * D. H. Cameron, * T. D. Carter, * I. McL. Flowers, J. N. Godlee, Claudia M. B. Grigson, L. H. Hurrell, * P. J. D. Kirk, * A. H. Labrum, G. J. M. Milton-Thompson, C. B. Mortimer, J. N. Rea, * C. F. Ridley, * Rudolph Schram, G. C. Spackman.

* By proxy.

Royal College of Physicians of London

At a comitia of the college held on Jan. 27, with Sir Russell Brain, the president, in the chair, Dr. G. E. S. Ward was reappointed external examiner in medicine for the Faculty of Radiologists.

The following, having satisfied the censors' board, were elected to the membership:

J. C. Barker, M.B. Camb., A. W. Beard, M.B. Camb., B.M. Oxfd, W. C. Boake, M.B. Melb., H. G. T. Bridge, B.M. Oxfd, Stephanie J. Carter, M.B. Lond., H. D. Chalke, L.R.C.P., Anthony Coady, M.B. Manc., A. T. Cook, M.B. Lond., captain R.A.M.C., Leon Cudkowicz, M.D. Lond., D. W. Davies, M.B. Lond., Pamela A. Davies, M.B. Glasg., Felicity C. Edwards, B.M. Oxfd, M. R. E. Evans, M.B. Lond., H. A. Fleming, M.D. N.Z., E. G. Galea, M.B. Queensland, Mary A. Le C. Hills, M.B. Sheff., W. A. Hudson, M.B. Sheff., R. B. Hunter, M.B. Edin., H. K. Ibbertson, M.B. N.Z., K. V. Jones, M.B. Lpool, captain R.A.M.C., W. I. N. Kessel, M.B. Camb., J. W. Lance, M.B. Sydney, I. H. Lawrence, M.B. Edin., D. W. Levy, M.B. Cape Town, Elizabeth A. Martin, M.B. Lond., Stephen Mattingly, M.B. Lond., W. K. Newton, M.B. Lond., D. W. Piper, M.B. Sydney, J. C. Pond, M.B. Lond., E. J. Ross, M.B. Lond., G. F. M. Russell, M.B. Edin., Merton Sandler, M.B. Manc., E. P. J. Silberstein, M.B. Melb., K. S. Somers, M.B. Witw'srand, C. E. Stroud, M.B. Wales, G. S. Wakefield, M.B. Lond., R. T. Turner Warwick, B.M. Oxfd, W. C. Watson, M.B. Glasg., Rose A. J. Whitelaw, M.B. Birm., W. H. Wolfenden, M.B. Sydney, Joan F. Zilva, M.B. Lond.

Licences to practise were conferred upon the following who have passed the final examination of the Conjoint Board:

J. R. Akers, N. M. Bailey, G. C. W. Baker, Margaret A. Barrie, G. D. Blackledge, J. P. Booth, P. S. Boulter, H. J. Bradley, A. T. Brown, Elizabeth A. Burns, Enid J. Cartwright, Joan E. Chalfers, Evelyn B. Clayton, V. E. Crapnell, Hilary J. Crawford, D. R. Crockatt, Sheila R. Crosland, I. I. Dainow, D. J. Davies, J. G. Davies, Ann Davis, G. H. Daw, J. A. Dew-Jones, G. S. Dormand, L. W. S. Eyears, W. J. Fessel, Phyllis M. Fleury, J. J. Fryatt, R. H. S. Gibbs, R. C. Giles, J. N. Godlee, S. A. Greenhalgh, R. L. Hargrove, Sheila C. Hay, W. T. Henry, I. Janota, Iona Johns, P. H. Johnson, Amar Nath Kalra, H. W. Kirkpatrick, J. K. M. M.Kay, Dorothy M. Mahabir, Eri Mallett, A. G. Matheson, Maryrose E. Mears, P. H. Merry, D. M. G. Murphy, G. A. Naylor, M. J. O'Neill, J. E. Pearson, Jane Platnauer, D. J. H. Prosser, Margaret A. Riddell, Muriel I. Riegelhaupt, K. P. Robinson, C. R. Salmon, A. N. Sargant, Ali Ahmed Shaikh, D. J. Sills, G. C. Spackman, J. D. Spink, Frank Summers, G. G. Temple, E. R. Thomas, L. E. Thomas, D. J. Thornton, Ailsa M. Thurgar, M. D. A. Vickers, A. W. Ware, Gladys M. L. West, J. P. M. Williams.

The following diplomas, and those mentioned in our issue of Jan. 22 (p. 211), were conferred jointly with the Royal College of Surgeons:

D.M.R.D.—Habib Abdalla, J. M. Allcock, J. S. Boyd-Wilson, Purnendu Sekhar Brahma, Russell Branster, I. McC. Carmichael, P. H. Coldwell, R. V. Dan, Mohanlal Gopalji Desai, P. D. De Villiers, W. W. Frank, Isaac Friedman, F. S. Grebbel, Isabella Grey Thomas, K. H. Harper, Neville Kaplan, Chadalavada Krishna Rao, E. W. Moore, Mary G. Murphy, M. N. Phillips, Susil Kumar Bardhan Ray, Basil Rosenberg, Bankim Behari Roy, Helen Sender, J. G. Sowerbutts, J. H. Stewart, J. V. Todes.

D.M.R.T.—C. F. Baxter, Savas Bissyllas, K. N. H. Low, Helen M. Mellor.

D.Path.—S. S. Epstein, Monojmohan Roy, Alexander Swan, J. W. Weston.

D.P.M.—Vrajlal Narshidas Bagadia, B. C. Bignold, Maatjie V. Buhrmann, H. W. Conran, L. D. J. Coore, David Davis, Raymond Doherty, Thomas Galla, R. A. Gelfer, Samson Goldin, Bevis Gordon, Mudiyanselage Gunapala Jayasundera, A. F. Johnstone, M. H. B. Joyce, W. A. Ker, R. D. Laing, R. P. Michael, P. McK. Middleton, Marjorie A. Morgan, J. G. Neville, Joseph Pisani, Prabhat Kumar Ray, G. H. Renton, E. A. Ritchie, D. H. Ropschitz, A. J. E. Rowe, Ralph Sander, C. P. Seager, Ratnakar Vaikunth Shirvaikar, H. J. Stott, J. L. Swift, Leonard Tarlo, J. F. Thomson, Eva Waller, J. S. Whiteley, W. E. J. Wilson, E. A. M. Wood, D. L. Walker.

D.P.H.—Noshir Kaikhusru Bharucha, Nulece Cassells, Joan M. St. V. Dawkins, R. C. Greenberg, Mumtaz Husain, D. M. O. Lowry, H. R. Miller, J. P. J. O'Keefe, Hla Kyaw Pe, G. W. Piper, G. H. G. Poole, J. D. Russell, W. J. Wigfield.

D.I.H.—A. J. Essex-Cater, W. N. Taylor.

D.T.M.&H.—Abu Mohammad Mustaqui Huq, G. L. Ritchie.

On Thursday and Tuesday, March 17 and 22, at 5 P.M., at the college, Pall Mall East, S.W.1, Prof. W. Melville Arnott will deliver the Oliver-Sharpey lectures, on Order and Disorder in Pulmonary Function.

University of Edinburgh

Dr. Alexander Kennedy, professor of psychological medicine in the University of Durham, has been appointed to the chair of psychiatry in succession to Sir David Henderson.

Dr. Kennedy, who is 46 years of age, received his medical education at St. Thomas's Hospital, where he qualified in 1932. After holding house-appointments there he took his M.D. and the M.R.C.P. in 1934 and specialised initially in pædiatrics. He continued his postgraduate studies at the Johns Hopkins University and in 1936 was awarded a Rockefeller travelling fellowship in neuropsychiatry. On his return to this country he became medical officer in charge of the children's department at the Maudsley Hospital while the present children's hospital was being built with the assistance of the Rockefeller Foundation. In 1938 he was awarded the gold medal of the Royal Medico-Psychological Association. During the late war he carried out research in the psychology of parachute and commando training and took part in operations in the Western Desert, Crete, Greece, and Yugoslavia. Later, with the rank of lieut.-colonel he was appointed head of a department dealing with the psychological aspects of military intelligence and subversive operations and was later an adviser on scientific intelligence in Germany. After the war he returned to the Maudsley Hospital as senior physician and joined the staff of the Maida Vale Hospital for Nervous Diseases. In 1947 he was appointed to the chair of psychological medicine at Durham. He is also physician to the Royal Victoria Infirmary, Newcastle upon Tyne, and clinical director at psychiatric units in the regional mental health service. In 1949 he was elected F.R.C.P. His publications include papers on hysteria, juvenile delinquency, experimental catatonia, and organic psychiatry. He has written radio plays under the pseudonym of Kenneth Alexander. He has for many years been honorary medical officer to the Amateur Boxing Association and president of the medical commission of the Association Internationale de Boxe Amateur which has been responsible for radical changes in the rules governing international tournaments in the interests of the safety of boxers. He has been a member of the medical executive of the Olympic Games and a past president of the British Medical Students' Association.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council held on Jan. 29 with Sir Arthur Gemmell, the president, in the chair, Prof. B. P. Watson was appointed William Meredith Fletcher Shaw memorial lecturer for 1955.

The following were elected to the membership:

R. H. O. Bannerman, David Barron, H. R. C. Benny, D. B. Brown, T. I. Cope, A. C. Coulthard, K. D. Drayton, W. A. W. Dutton, B. A. Gavourin, H. S. Gavourin, Tara Sankar Ghosh, A. P. B. Harston, Beryl O. Howie, Beryl M. Joles, Mukulika Konar, Wendy E. Lewington, J. D. Llywelyn-Jones, Philippa M. Ludlam, C. F. Macdonald, J. G. Mathie, Appuahandy Ariyaman Mahanama Mendis, David Methuen, Catherine H. Mitchell, Nanda Gopal Mukherjee, Rathindra Nath Nag, Chiew Seng Oon, Shephalika Prodhan, R. T. Sears, Harendra Bahadur Sinha, D. H. K. Soltau, O. S. Treisman, Yin-Kai Tsao, J. K. Tully, J. A. M. Van Belkum.

The following have been awarded the diploma in obstetrics:

L. C. Steindel, D. C. Wilkins.

Faculty of Radiologists

At a recent examination for the fellowship the following were successful:

R. G. Britt, S. Davis, J. G. Duncan, R. G. Grainger, J. B. Hearn, J. W. Laws, H. F. March, L. L. Ralph, W. Stachurko (radiodiagnosis); E. W. Emery, H. G. Frank, R. W. Gunderson, P. B. Kunkler, K. A. Newton, T. M. Prossor (radiotherapy).

Colour Television in Pathology

The value of colour television in long-distance consultations between pathologists was investigated at a symposium held last month in Washington, D.C., by the Armed Forces Institute of Pathology. In one of the demonstrations tissue removed at an operation in Philadelphia was televised to pathologists in Baltimore and Washington, who assisted in the diagnosis.

Committee on Hospital Supplies

The Central Health Services Council have appointed a committee on hospital supplies with the following terms of reference:

"To investigate and report on the organisation of all forms of hospital supplies, including their purchase, storage and issue, throughout the National Health Service."

The secretary of the committee is Mr. L. B. Jacques, Ministry of Health, Savile Row, London, W.1.

University College of the West Indies

On Jan. 20, as part of its third Inter-American Congress, the American College of Surgeons led by its president, Dr. A. Blalock, and the director, Major-General Hawley, visited the university college and held two scientific sessions which were attended by seventy fellows of the college. Papers were read by surgeons from the university college and the government medical service, and a tour of the university college hospital included demonstrations in the surgical and other departments.

Epsom College Centenary

On the occasion of the centenary the Queen, as patron, and the Duke of Edinburgh are to visit the college on May 13. The Queen has already sent a donation in response to the appeal for £150,000 for improvements to college buildings. So far £12,000 has been contributed, including donations of £1000 from Lord Webb-Johnson, £650 from the Surrey Local Medical Committee, £500 from the Medical Insurance Agency, 100 guineas from the Notts Medical Committee, 50 guineas from the Clerical, Medical & General Assurance Co., £50 from the Norwich Union Assurance Society, and 50 guineas from the Berks Medical Committee. Donations should be sent to the appeal secretary, Epsom College, Epsom, Surrey.

Diary of the Week

FEB. 6 TO 12

Tuesday, 8th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Dr. J. A. Smiley: Personal Factors in Accident Proneness. (First Milroy lecture.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
3.45 P.M. Dr. E. F. Scowen: Significance of the Endocrines in Breast Cancer. (Imperial Cancer Research Fund lecture.)

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Prof. J. R. Squire: Correlation between Laboratory and Clinical Findings in Hypersensitivity.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.30 P.M. *Experimental Medicine and Therapeutics.* Dr. Sheila Sherlock, Mr. A. G. Riddell, Dr. W. H. J. Summerskill, Dr. W. T. Cooke: Hepatic Coma.
8 P.M. *Psychiatry. History of Medicine.* Prof. Aubrey Lewis, Dr. A. D. Leigh, Dr. James Harper: British Psychiatrists in the First Half of the Nineteenth Century.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Dr. H. A. Davidson: Infertility in the Male.

CHELSEA CLINICAL SOCIETY
8.30 P.M. (Rembrandt Hotel, Thurloe Place, S.W.7.) Lord Justice Denning, Dr. Robert Forbes: Increase in Medical Litigation.

MANCHESTER MEDICAL SOCIETY
8 P.M. (Medical School.) *Surgery.* Mr. D. S. Poole-Wilson: Treatment of Hydronephrosis.

Wednesday, 9th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine.* Dr. T. Anwyl-Davies, Dr. J. F. Buchan: Articular and Non-articular Rheumatic Complications of Venereal Disease.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. Henry Haber: Allergic Vasculitis.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. *Pathology.* Prof. A. C. P. Campbell: Pathology of Leptospirosis. (Presidential address.)

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow
5 P.M. Prof. A. A. Miles: Serum Proteins in the Vascular Phenomena of Inflammation. (Finlayson lecture.)

Thursday, 10th

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P.M. Dr. Smiley: Personal Factors in Accident Proneness. (Second of two Milroy lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Mr. P. H. Newman: Spondylolisthesis. (Hunterian lecture.)

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. Prof. C. H. Gray: Chemistry of the Porphyrias.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Animal Parasites of the Skin.

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (11, Chandos Street, W.1.) Dr. James Moore: Concept of Unity in Psychosomatic Medicine.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Dr. P. H. Whitaker, Dr. A. J. Robertson: Tin Smelters' Pneumoconiosis. Dr. E. Sherwood Jones: Scientific Investigations of Disease as illustrated by Observations on Blood.

UNIVERSITY OF ST. ANDREWS, Medical School, Small's Wynd, Dundee
5 P.M. Prof. W. I. C. Morris: Sudden Death in Pregnancy and Childbirth.

Friday, 11th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
2 P.M. Mr. J. R. Armstrong: Differential Diagnosis of Sciatic Pain.
4 P.M. Dr. J. W. Todd: Healthy Living.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. P. F. Borrie: Vascular Disorders.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330–332, Gray's Inn Road, W.C.1
3.30 P.M. Mr. Chapple Gill-Carey: Epistaxis.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW
5 P.M. Dr. E. G. Oastler: Cushing's Syndrome and the Adrenogenital Syndrome.

Saturday, 12th

SOUTH EAST METROPOLITAN REGIONAL TUBERCULOSIS SOCIETY
10.30 A.M. (London School of Hygiene and Tropical Medicine.) Dr. William Hartston, Dr. J. F. Galloway: Preventive Measures in Pulmonary Tuberculosis.

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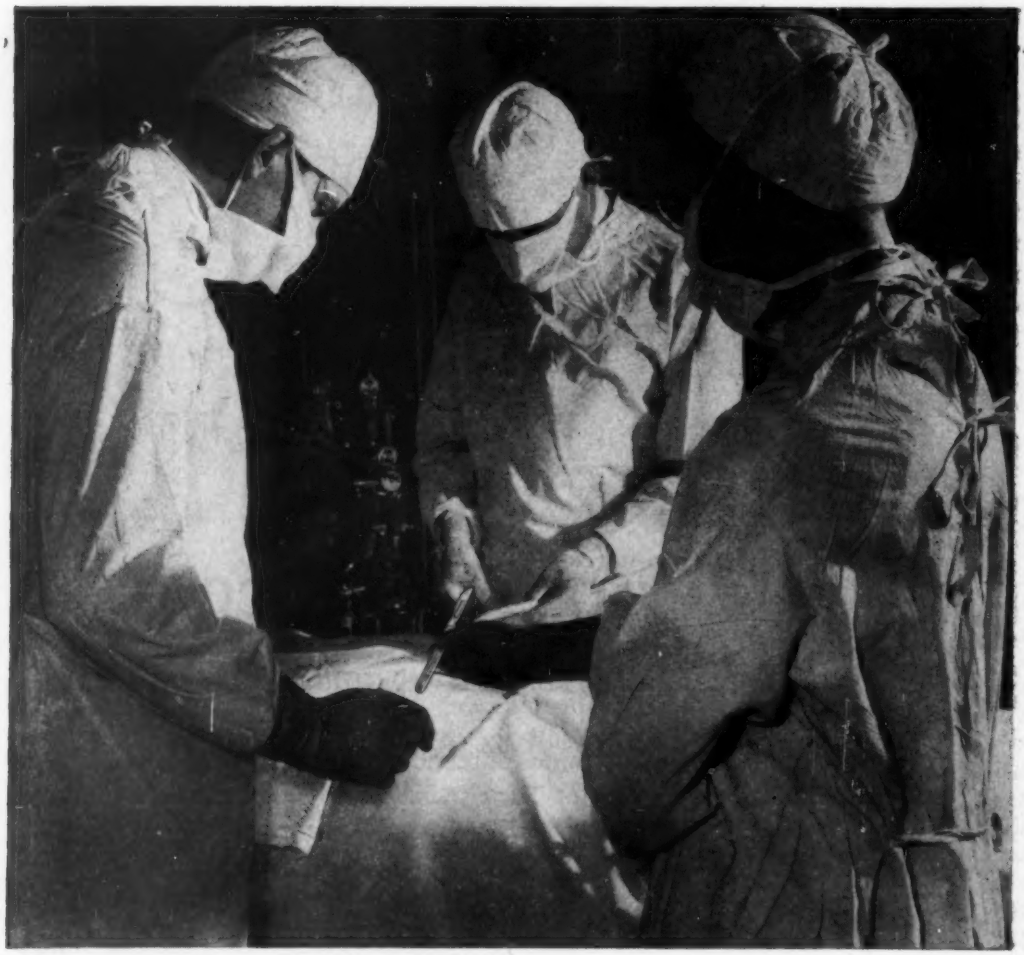

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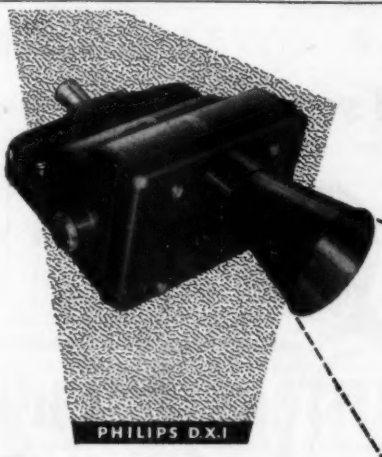

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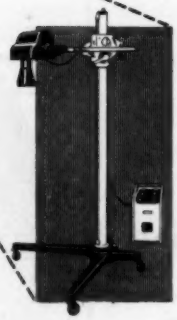

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Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

The next EXAMINATION for the MEMBERSHIP will commence on MONDAY, 28TH MARCH, 1955.

Prospective candidates are asked to note that entries accompanied by the certificates, testimonials, and the examination fee of 15 guineas as required by the by-laws, must reach the College not later than first post on Monday, 28th February, 1955. Candidates must have been qualified for 18 months.

Candidates who propose to submit published work under the regulations are required to give 28 days notice, and should apply in writing to the Registrar, without delay, for detailed instructions as to the procedure they should follow. Completed entries for published work must also reach the College not later than first post on Monday, 28th February, 1955.

HAROLD BOLDERO, D.M., Registrar.

12, Pall Mall East, London, S.W.1.

UNIVERSITY OF LONDON

A LECTURE on "Clinical Investigations in Hypergammaglobulinemia" will be given by Prof. J. WALDENSTRÖM (Lund) at 5 P.M. on 15TH FEBRUARY at University College Hospital Medical School, University-street, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

(Incorporating the teaching facilities of Queen Charlotte's Maternity Hospital, Chelsea Hospital for Women and the Department of Obstetrics and Gynæcology at Hammersmith Hospital)

A few vacancies remain for the SPRING TERM (7th March–4TH JUNE, 1955). Applications are invited from graduates with a registrable qualification. Graduates attend each of the constituent hospitals in turn for clinical work, and attend lectures and special demonstrations at all 3 hospitals. Enrolment fee £3. Tuition fee £36 a term.

General practitioners wishing further experience in obstetrics may be accepted to attend the course at Queen Charlotte's Maternity Hospital for shorter periods—i.e., 2–4 weeks. They will be allowed to do normal deliveries and will have the opportunity of attending the combined classes of lectures and demonstrations at the 3 hospitals of the Institute. Ministry of Health grants are payable to approved general practitioners attending for a period of 2 weeks.

Hostel accommodation is available at Queen Charlotte's Hospital and at Hammersmith Hospital.

Further particulars can be obtained from the Secretary, Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, S.W.3.

UNIVERSITY OF ABERDEEN

FORTNIGHT'S GENERAL INTENSIVE REFRESHER COURSE FOR MEDICAL PRACTITIONERS

A fortnight's intensive course, intended mainly for General Practitioners, will be held from 16TH to 28TH MAY, 1955, in the University Medical Buildings, Foresterhill, and the associated Hospitals in Aberdeen.

There are schemes for financial assistance whereby the fee for the Course (10 guineas) and the expenses of travelling and of the provision of a locum may, subject to certain conditions, be repaid to doctors engaged in practice under the National Health Service.

Numbers attending the Course will be limited and early application should be made to the Chairman, Postgraduate Medical Committee, Department of Child Health, University Buildings, Foresterhill, Aberdeen, from whom further information may now be obtained.

UNIVERSITY OF EDINBURGH

CHAIR OF PUBLIC HEALTH AND SOCIAL MEDICINE

The University Court invites applications for appointment to the above Chair which will become vacant on 30TH SEPTEMBER, 1955, by the retirement of Prof. F. A. E. Crew.

The stipend will be not less than £2650 p.a. together with superannuation benefit and family allowance where applicable. The appointment is subject to an age limit of 70.

The terms and conditions of appointment may be obtained from the undersigned, with whom applications (10 copies), giving the names of 2 referees and including any testimonials or evidence candidates may wish to offer, should be lodged not later than 8th March, 1955. A candidate from overseas may submit 1 copy of his application.

CHARLES H. STEWART, Secretary to the University.

UNIVERSITY COLLEGE LONDON

(Gower-street, W.C.1)

4 LECTURES by Dr. S. R. ELSDEN (University of Sheffield) entitled "Respiratory Mechanisms in Bacteria" will be given on THURSDAYS, 10TH, 17TH, 24TH FEBRUARY, 3RD MARCH, at 4.45 P.M.

Admission free, without ticket.

E. A. L. GUETERBOCK, Secretary.

UNIVERSITY COLLEGE LONDON

FREE PUBLIC LECTURES, SPRING TERM, 1955

FRIDAY, 18TH FEBRUARY, at 5.30 P.M.. Prof. F. BERGEL, "Attempts at Chemotherapy of Malignant Diseases."

MONDAYS, 28TH FEBRUARY, 7TH, 14TH MARCH, at 4.45 P.M., Dr. JOSEPH NEEDHAM, "New Light on Physico-Chemical Aspects of Morphogenesis."

Complete list of public lectures from Publications Officer, University College London, Gower-street, W.C.1. (Stamped envelope required.)

UNIVERSITY COLLEGE LONDON

(Gower-street, W.C.1)

Dr. E. E. SNELL (University of Texas) will give a PUBLIC LECTURE entitled "The Relationship of Structure to Catalytic Activities of Vitamin B_6" on MONDAY, 14TH FEBRUARY, at 4.45 P.M.

Admission free, without ticket.

E. A. L. GUETERBOCK, Secretary.

ROFFEY PARK INSTITUTE

(DEPARTMENT OF OCCUPATIONAL HEALTH AND SOCIAL MEDICINE)

POSTGRADUATE COURSE ON RESETTLEMENT AFTER ILLNESS

The next residential course starts on MONDAY, 7TH MARCH, 1955, and lasts 5 days. The course is intended for Medical and Surgical Consultants and Senior Registrars, for whom Regional Boards normally pay the comprehensive cost of £10 10s. Some vacancies are available for general practitioners under National Health Service regulations. Accommodation is provided in a comfortable residential club. Course limited to 25.

Apply Medical Director, Roffey Park Institute, Horsham, Sussex.

COURSE IN THERAPEUTICS

at the

INSTITUTE OF ORTHOPÆDICS

28TH FEBRUARY–5TH MARCH, 1955

Monday, 28th February, Town Section, 234, Great Portland-street, W.1. (Lecture Room)

10.00 A.M.–11.00 A.M. Rest and Movement .. Mr. H. J. BURROWS

11.15 A.M.–12.35 P.M. Electrotherapy .. Mr. H. J. SEDDON

1.45 P.M.–3.00 P.M. Chemotherapy in Joint Tuberculosis .. Dr. F. H. STEVENSON

3.00 P.M.–4.00 P.M. Manipulation .. .. Mr. K. I. NISSEN

Tuesday, 1st March, Town Section

10.00 A.M.–11.00 A.M. Osteomyelitis .. Mr. D. TREVOR

11.15 A.M.–12.40 P.M. Treatment of Rheumatic Joint Disorders .. Dr. P. D. SAVILLE

2.00 P.M.–3.00 P.M. The Surgery of Spastic Paralysis .. Mr. K. I. NISSEN

Wednesday, 2nd March, Town Section

10.00 A.M.–11.00 A.M. Traction Injuries of Nerves .. Mr. D. M. BROOKS

11.15 A.M.–12.40 P.M. Bone Grafting and Plating .. Mr. D. TREVOR

1.45 P.M.–3.15 P.M. Arthrodesis and Arthroplasty .. Mr. H. J. BURROWS

3.15 P.M.–4.15 P.M. Tendon Injuries .. .. Mr. J. I. P. JAMES

Thursday, 3rd March, Country Section, Brockley Hill, Stanmore, Middlesex (Hut 5)

9.45 A.M.–12.30 P.M. Orthopædic Appliances; and Preservation of Movement in Joint Tuberculosis .. Mr. J. A. CHOLMELEY

2.00 P.M.–3.30 P.M. Treatment of Low Back Pain .. Mr. P. H. NEWMAN

Friday, 4th March, Country Section

10.00 A.M.–11.00 A.M. Clinical Demonstration .. Mr. A. T. FRIPP

11.30 A.M.–12.30 P.M. Clinical Demonstration .. Mr. J. I. P. JAMES

2.30 P.M.–4.00 P.M. Treatment of Pott's Diseases .. Mr. H. J. SEDDON

Saturday, 5th March, Country Section

10.00 A.M.–NOON Plastic Surgery in Orthopædics .. Mr. R. L. G. DAWSON

The fee for the course (including lunch and tea) is 7 guineas. Early application should be made to the Dean at the Town Section.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE

THE CERTIFICATE, AND THE DIPLOMA, IN PUBLIC HEALTH, AND THE DIPLOMA IN INDUSTRIAL HEALTH

The next bi-annual Course of Instruction for the Certificate in Public Health (C.P.H.) will commence on 18TH MARCH, 1955. This leads to Courses both for the Diploma in Public Health and for the Diploma in Industrial Health. All Courses may be taken either whole-time or part-time.

Prospectuses, enrolment forms, and full details, may be obtained from the Secretary, 28, Portland-place, London, W.1 (Tel. LANgham 2731–2).

INSTITUTE OF BASIC MEDICAL SCIENCES

ROYAL COLLEGE OF SURGEONS OF ENGLAND

BRITISH POSTGRADUATE MEDICAL FEDERATION

(UNIVERSITY OF LONDON)

Applications are invited for the full-time post of SENIOR LECTURER IN BIO-CHEMISTRY. The successful candidate will be expected to take part in the teaching activities of the Department of Physiology. Facilities for research are available both in the laboratories of the Department and the Buckston Browne Farm of the Royal College of Surgeons. Salary will be within the University Scale of £1000–£100–£1500 p.a., together with membership of the F.S.S.U. The commencing salary will be determined by the age, qualifications and experience of the successful candidate.

Applications (3 copies), together with the names of 2 referees, should be sent not later than 5th March, 1955, to Professor DAVID SLOME, Department of Physiology, Royal College of Surgeons of England, Lincoln's Inn-fields, W.C.2, from whom further particulars may be obtained.

CLARE COLLEGE

HARRISON WATSON STUDENTSHIP FOR MEDICAL RESEARCH

The Governing Body of Clare College, Cambridge, invite applications for a Harrison Watson Studentship commencing on 1ST OCTOBER, 1955. The Studentship, which is open to male graduates of any University in any country, is for research or training in research "into the causes and cure of tuberculosis, and/or other diseases of an allied character." The Governing Body intend to interpret these terms in the widest possible sense and they invite detailed inquiries.

The Studentship may be :—

(i) a Junior Studentship of value between £500 and £650 a year, normally tenable for 3 years, or

(ii) a Senior Studentship of value between £800 and £1000 a year, tenable for 1, 2, or 3 years.

The Student may also hold another award or post, and may engage in a limited amount of teaching, if in the opinion of the Governing Body these do not interfere with his research. The Student will be required to become a member of Clare College and the University of Cambridge, and to reside and work in Cambridge.

Applications should contain an account of the applicant's career, and a general statement of his proposed course of research. No testimonials need be submitted, but the names and addresses of not fewer than 2 referees should be sent. Applications and inquiries should be addressed to the Master, Clare College, Cambridge. The closing date for application is 16th April, 1955.

THE ROYAL SOCIETY

BURLINGTON HOUSE
London, W.1
REGent 3335

ROYAL SOCIETY AND NUFFIELD FOUNDATION COMMONWEALTH BURSARIES

Applications are invited for awards under the Royal Society and Nuffield Foundation Commonwealth Bursaries Scheme which was instituted to provide facilities for increasing the efficiency of scientists of proven worth by enabling them to pursue research, learn techniques, or follow other forms of study in natural science in countries other than their own in the Commonwealth where the physical or personal environment or both are peculiarly favourable.

The bursaries provide travel, maintenance at a rate of about £600 a year depending on living costs and the applicant's circumstances and are tenable usually for periods of 2–12 months ; they are not intended to provide any salary as such. Bursars will not be permitted to prepare specifically for, or to take examinations for, higher degrees or diplomas.

Fuller particulars and forms of application may be obtained from the Assistant Secretary, The Royal Society, Burlington House, London, W.1. Applications should be made before 15th March, 1955, for proposed visits beginning during the period from July to December, 1955.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

Notice is hereby given that an election of Junior Fellows to begin work on 1ST OCTOBER next will take place in May, 1955. Junior Fellowships have successive annual values of £800, £850, and £900, for 3 years. As a rule, superannuation benefits are provided, to which the successful candidates will be required to contribute 5% of the annual stipend and to which the Trust will make a contribution of 10%. Candidates must have taken a degree in a faculty of a university approved by the Trustees in Her Majesty's Dominions, Protectorates and Mandated Territories, India, Pakistan and the Republic of Ireland, or a medical diploma registrable in the United Kingdom. Elections to Junior Fellowships are rarely made above the age of 35 years.

Applications from candidates must be received not later than 1st April. Candidates must submit evidence that they can be given accommodation in the departments where they propose to work, which must be either in Great Britain or Ireland.

Forms of application and all information may be obtained by letter only, addressed to the Secretary, Beit Memorial Fellowships for Medical Research, The Lister Institute, Chelsea Bridge-road, London, S.W.1. For Overseas candidates forms of application may be obtained from the Secretary, South African Medical Council, P.O. Box 205, Pretoria, South Africa ; the Director, Commonwealth Office of Education, Box 3879, Sydney, Australia ; the Department of Health, Wellington, New Zealand ; and the Canadian Medical Association, 184, College-street, Toronto, Canada.

INSTITUTE OF DERMATOLOGY. British Postgraduate MEDICAL FEDERATION—UNIVERSITY OF LONDON. Applications are invited for the appointment of BIOCHEMIST preferably with hospital experience, who will be required to take charge of a new Sub-department (at the Inpatient Department of St. John's Hospital for Diseases of the Skin at Homerton) under the general control of the Director of Pathology. Grading and salary according to age, experience and qualifications. Candidates must have aptitude and inclination for research having a bearing on dermatology.

Immediate application should be made to the Secretary, Institute of Dermatology, St. John's Hospital for Diseases of the Skin, Lisle-street, Leicester-square, W.C.2, from whom further particulars concerning the appointment can be obtained.

UNIVERSITY OF LONDON. Applications are invited for TURNER AND NEWALL RESEARCH FELLOWSHIPS in Engineering, Inorganic Chemistry, Physics or an allied subject, tenable from 1st October, 1955, normally for 3 years in the first instance. Salary not less than £750 p.a. with family allowances and F.S.S.U.

Information and application forms can be obtained from the Academic Registrar, University of London, Senate House, W.C.1. Applications must be received not later than 16th April, 1955.

UNIVERSITY OF LONDON. Applications are invited for I.C.I. RESEARCH FELLOWSHIPS in Biochemistry, Chemistry, Chemotherapy, Engineering, Metallurgy, Pharmacology, Physics or allied subjects, tenable from 1st October, 1955, normally for 3 years in the first instance. Salary not less than £750 p.a. with family allowances and F.S.S.U.

Information and application forms can be obtained from the Academic Registrar, University of London, Senate House, W.C.1. Applications must be received not later than 16th April, 1955.

Hospital Services : Senior Appointments

NATIONAL HOSPITALS FOR NERVOUS DISEASES. The Board of Governors invites applications for the appointment of ASSISTANT PHYSICIAN (Consultant status) at The National Hospital, Queen-square, W.C.1. Candidates should be Members or Fellows of the Royal College of Physicians. The appointment will be part-time and the successful applicant will be required to attend 4 half-days per week.

Applications (36 copies), giving the names of 3 referees, must be submitted to the undersigned not later than 5th March, 1955.

H. EWART MITCHELL, Secretary.

The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT ANÆSTHETIST (whole-time) at West Herts Hospital, Hemel Hempstead (167 Beds). Salary £1500 (unless below age 32)—£1950.

Applications by 7th March, 1955.

(2) Whole-time ASSISTANT PATHOLOGIST, Central Histological Laboratory, Whittington Hospital, Archway Wing, N.19. Good experience in morbid anatomy essential and experience in neuropathology an advantage. Salary £1500 (unless below age 32)–£1950.

Applications by 14th March, 1955.

Hospital and Laboratory may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ST. THOMAS'S HOSPITAL, London, S.E.1. Assistant RADIOTHERAPIST for 1 year in the first instance from 17th April, 1955. Salary £1575 p.a.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 12th February.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. Whole-time SENIOR CASUALTY OFFICER (£1500–£1950 p.a.) to have clinical charge of Casualty Department. Tenable up to 4 years. Higher qualification advantageous.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 21st February, 1955.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT PSYCHIATRIST, Little Plumstead (near Norwich) Mental Deficiency Group of hospitals and Child Psychiatry Service. The Group (900 Beds) which is progressive and the centre for much outpatient work including child guidance clinics, is recognised as a training centre for the D.P.M. by the Conjoint Board and the R.M.P.A. The building of a number of new villas is well advanced. House available. Salary scale £1500–£1950. Candidates invited to visit Hospital by direct arrangement with Medical Superintendent.

(2) ASSISTANT RADIOLOGIST (whole-time) at Hospitals in the Peterborough and Stamford area. Duties mainly at Peterborough Memorial Hospital where there is a new and fully equipped X-ray Department. Wide experience and higher qualification necessary. Salary scale £1500–£1950. Candidates invited to visit hospitals concerned by direct arrangement with Hospital Management Committee Secretary, Memorial Hospital, Peterborough.

Applications (8 copies), stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 21st February, 1955.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. Con-SULTANT PSYCHIATRIST/MEDICAL SUPERINTENDENT for Mental Deficiency Service in Western half of the Region. Whole-time appointment. In addition to duties as Medical Superintendent at Risbridge Hospital, Kedington (285 Beds), and Riversfield Home, St. Neots (25 Beds), there will be consultative work at Child Psychiatric Clinics. House available at Risbridge Hospital.

Applications (8 copies), stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 14th February. 1955. Candidates invited to visit Hospital by direct arrangement with Medical Superintendent, Risbridge Hospital.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Hartlepools and Sedgefield Hospital Management Committees

CONSULTANT ANÆSTHETIST, whole-time, or maximum part-time. Appointee will be required to devote approximately 4 sessions per week to Sedgefield hospitals and to be resident in the Hartlepools Group area. Candidates may visit hospitals by arrangement with Senior Administrative Medical Officer.

Applications, with names and addresses of 3 referees, to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

Winterton Hospital, Sedgefield (2000 Beds)

CONSULTANT PSYCHIATRIST, whole-time, or maximum part-time. Resident ; house available. Full particulars from Medical Superintendent.

Applications, with names and addresses of 3 referees, to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Locum OPHTHALMIC SURGEON for the Special Area of Cumberland and North Westmorland (main hospital Cumberland Infirmary, Carlisle : 340 Beds). Required for a period of 3–4 months from 14th February, 1955. Remuneration at Consultant or Senior Hospital Medical Officer level according to qualifications and experience.

Applications immediately to Senior Administrative Medical Officer, 72, Warwick-road, Carlisle.

SECOND ADVERTISEMENT

LIVERPOOL REGIONAL HOSPITAL BOARD. NEWSHAM GENERAL HOSPITAL. Applications are invited for the whole-time post of RESIDENT CONSULTANT PHYSICIAN-SUPERINTENDENT of the above Hospital of 1304 general beds, including a large Geriatric Unit. The successful candidate, in addition to undertaking clinical work in general medicine and geriatrics, will be required to undertake medical administrative duties including control of the geriatric waiting-list for the Hospital, which is the main Geriatric Centre for the City of Liverpool. An unfurnished house will be available on rental.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 19th February, 1955.

VINCENT COLLINGE, Secretary to the Board.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Maximum Part-time CONSULTANT ANÆSTHETIST to the Bolton and District Hospitals (Bolton Royal Infirmary, Bolton District General Hospital, &c.). Wide experience, higher qualification in anæsthetics essential. Appointee to live in or near Bolton. 18th February, 1955.

(*b*) Whole-time NON-RESIDENT ASSISTANT PHYSICIAN in Geriatrics (Senior Hospital Medical Officer) to the Wigan and Leigh Hospital Centre, main duties in Leigh area (Atherleigh, Astley and Ashton Hospitals and occasionally at Leigh Infirmary). Appointee will work under general supervision of Consultant Physician and will be required to undertake the domiciliary investigation of patients and to establish close liaison with general practitioners and the Local Health Authority. Good experience in general medicine and previous experience in care of chronic sick desirable. Appointee to live in or near Leigh. 20th February, 1955.

Application forms from the Senior Administrative Medical Officer to the Board at Cheetwood-road, Manchester, 8, to be returned by dates stated.

PERTH, COUNTY AND CITY OF PERTH GENERAL HOSPITALS. THE EASTERN REGIONAL HOSPITAL BOARD (SCOTLAND) invite applications from registered medical practitioners for the appointment of DEPUTY GROUP MEDICAL SUPERINTENDENT of the County and City of Perth General Hospitals at a salary of £1120–£50–£1170–£65(2)–£1300 p.a. The post is subject to the National Health Service (Scotland) superannuation regulations and is terminable by 3 months notice on either side.

Further particulars and forms of application may be had from the Secretary, Eastern Regional Hospital Board, 430, Blacknessroad, Dundee, with whom applications must be lodged by 19th February, 1955.

PLYMOUTH CLINICAL AREA. South-Western Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of a CONSULTANT RADIOLOGIST in the Plymouth Clinical Area which comprises Plymouth, Kingsbridge, Tavistock, Launceston, Bude and Liskeard. Applicants should have had wide experience in radiology, and possession of the Diploma in Medical Radiology is essential. For a period of 3 years the appointment will be held on a whole-time basis ; thereafter the terms of the appointment in this respect will be the subject of review. The successful candidate will be required to work mainly at the South Devon and East Cornwall Hospital, Plymouth, and to work at other hospitals in the Clinical Area as may be determined by the Regional Board from time to time.

Applications (12 copies), stating date of birth, qualifications and experience together with 12 copies of 2 testimonials and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 5th March, 1955.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time or Whole-time CONSULTANT RADIOTHERAPIST to the Hogarth Radiotherapeutic Centre at Nottingham General Hospital and associated clinics in the area. Applicants should state whether they wish to be considered for the designation of Radiotherapist-in-Charge.

Application form and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 26th February, 1955.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT ANÆSTHETIST for the Moorgate General Hospital, Rotherham, with duties in other hospitals in the Group. Candidates should preferably be in possession of the D.A. Salary scale £1500–£50–£1950 p.a.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 4th March, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER in Orthopædics (9 sessions weekly) for the West Dorset Group of hospitals for an indefinite period. Remuneration in accordance with the terms and conditions of service of hospital medical staff.

Applications immediately to Area Secretary, South West Metropolitan Regional Hospital Board, Highcroft, Romsey-road, Winchester.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Part-time CONSULTANT in Diagnostic Radiology to undertake 3 notional half-days a week (including travelling time) in the Medway and Gravesend Group of hospitals, for duties at the Gravesend and North Kent Hospital, Gravesend. Candidates must have had a wide experience in the specialty and hold an appropriate diploma. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales). Candidates may visit the Hospital concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 19th February, 1955.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. COUNTY AND CITY OF PERTH GENERAL HOSPITALS. Applications are invited for the whole-time post of ANÆSTHETIST at hospitals in the above group (including Bridge of Earn Hospital and Perth Royal Infirmary). The anæsthetic services are under the supervision of the Senior Anæsthetist for the Perth Area. Salary £1500 (at age 32)–£50–£1950. Terms and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 26th February, 1955.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited from medical officers having training and experience in the methods of physical medicine for appointment on a full-time basis in the grade of SENIOR HOSPITAL MEDICAL OFFICER. An appropriate higher qualification or diploma is desirable. Main duties will be in hospitals and clinics in Aberdeen.

Applications, together with the names and addresses of 2 referees, should be forwarded by 12th March, 1955, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointments of 2 Whole-time ASSISTANT PHYSICIANS (geriatrics) for Regional duties, based at Stobhill/Foresthall Hospitals, Glasgow, or at the Western District Hospital as may be arranged. Salary (at age 32 and over) on the scale £1500–£50–£1950. These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER (obstetrics and gynæcology) required St. James Hospital, Tredegar, 6th–27th March, 1955.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens CONSULTANT SURGEON required, Merthyr and Aberdare area, 18th March–2nd April, 24th July–20th August, 1955.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a post as CONSULTANT SURGEON at hospitals managed by the North West Hospital Management Committee. The terms and conditions of the appointment will be in accordance with the Authority's application of the Spens report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be received not later than 2nd March, 1955.

CANADA. ONTARIO INSTITUTE OF RADIOTHERAPY, TORONTO GENERAL HOSPITAL, TORONTO, ONTARIO, CANADA. ASSISTANT RADIOTHERAPIST for the above Institute. Salary according to qualifications, but not less than $9000 p.a.

Applications should state date of birth, qualifications, experience, present appointment, and the names of 2 referees. Replies to be sent by air-mail to the Director, Ontario Institute of Radiotherapy, Toronto General Hospital, 101, College-street, Toronto, Ontario, Canada.

CANADA. REGINA GENERAL HOSPITAL, Regina, SASKATCHEWAN. Applications are invited for the position of DIRECTOR, Radiology Department, in this 800-Bed General Hospital. Work mostly diagnostic. Remuneration and conditions of service to be arranged. Minimum starting salary $10,000.

Applications and inquiries to Superintendent, Regina General Hospital, Regina, Saskatchewan.

NEW ZEALAND. COOK HOSPITAL BOARD, Gisborne, NEW ZEALAND. Applications, closing Friday, 25th March, 1955, are invited from registered medical practitioners for the appointment of Full-time or Part-time ANÆSTHETIST. Full-time appointment salary to be in accordance with the following gradings :—

Senior Registrar £1105 15s.–£1220 15s.
Junior Specialist £1352 12s.–£1652 12s.

Amounts quoted are in New Zealand currency. The position is non-resident.

Conditions of appointment will be supplied on application to the High Commissioner for New Zealand, 415, Strand, London, W.C.2, but completed applications are to be sent by air-mail direct to the Secretary, Cook Hospital Board, Gisborne, N.Z.

Hospital Services : Junior Appointments

DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich, S.E.10. HOUSE SURGEON (pre-registration) required immediately. Post recognised by the Royal College of Surgeons.

Applications, stating age, nationality, qualifications and experience with 3 recent testimonials, should be sent as soon as possible to the Group Secretary, Dreadnought Seamen's Hospital, Greenwich, S.E.10.

DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich, S.E.10. There will be a vacancy for a NON-RESIDENT CASUALTY AND RECEIVING-ROOM OFFICER on 19th February. Salary £745 p.a. Post recognised by the Royal College of Surgeons.

Applications, stating age, qualifications and experience, together with the names of 3 referees, should be sent to the undersigned on or before 12th February.

F. A. LYON, Secretary.

Dreadnought Seamen's Hospital, London, S.E.10.

EASTERN HOSPITAL (Fevers), London, E.9. House OFFICERS (third post), vacant 1st April. Duties may include some work in Chest Unit. Facilities for postgraduate study for higher qualifications.

Applications, with testimonials, to Group Secretary, Hackney Hospital, E.9, by 12th February, quoting EH/HO.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of HOUSE SURGEON to Gynæcological Department (recognised for M.R.C.O.G.). Duties to commence 1st April, 1955. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 9th February, 1955.

GERMAN HOSPITAL, London, E.8. (General—157 Beds.) Applications are invited from registered medical practitioners for the 6 months appointment of HOUSE SURGEON (obstetrics and gynæcology), vacant on 15th February, and should be sent to the Group Secretary, Hackney Hospital, E.9, quoting GH/HS.

HACKNEY HOSPITAL, London, E.9. (General—342 Beds.) Applications are invited for the full-time post of JUNIOR HOSPITAL MEDICAL OFFICER of the geriatric wards at the above Hospital, to assist the Physician-in-Charge. The department (to which the full facilities of the Hospital for investigation and treatment are available, including a modern Occupational Therapy Department) contains 164 Beds for patients undergoing active treatment and rehabilitation, and 160 Beds for long-stay cases. The appointment (£775–£50–£1075 p.a.) is for a period not exceeding 4 years in the first instance.

Applications should reach the Group Secretary at the above address by 12th February.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. RESIDENT HOUSE PHYSICIAN (pædiatrics) required 1st April. Post recognised for D.C.H.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 12th February.

KING EDWARD MEMORIAL HOSPITAL, Ealing. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) for duties at King Edward Memorial Hospital and associate hospitals. Resident. Vacant 1st April, 1955. A Resident Registrar Anæsthetist is employed. Post recognised for D.A. and F.F.A.R.C.S. examinations.

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 14th February, 1955.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. 2 vacancies occur 1st April, 1955, for RESIDENT HOUSE PHYSICIAN. Appointments for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and posts are graded as House Officer. Duties include work in the Outpatient Department and Refill Clinic as well as in wards.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 19th February.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR HOUSE OFFICER to the receiving-room becoming vacant on 13th March, 1955. The appointment will be for 6 months only and in view of the nature of the duties preference will be given to applicants who have held a previous appointment at the Hospital.

Applications (6 copies), giving full particulars, together with 6 copies of 3 recent testimonials, should reach the House Governor by 10th February, 1955. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR HOUSE OFFICER to the Clinical Laboratories, becoming vacant on 1st April, 1955.

Applications (6 copies), giving full particulars, together with 6 copies of 3 recent testimonials, should be received by the House Governor by 10th February, 1955.

H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR in General Surgery. A higher qualification, although desirable, is not essential.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the House Governor by 10th February, 1955. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of Part-time REGISTRAR to the Department of Plastic Surgery. A higher qualification, although desirable, is not essential. The successful candidate would be required to attend on 6 half-days weekly, and the duties will be divided between The London Hospital, its Annexe at Brentwood and the Hackney Hospital.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the House Governor by 25th February, 1955.

MEMORIAL HOSPITAL, Woolwich, S.E.18. Woolwich GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics), vacant 21st February at above Hospital. Recognised for F.F.A. R.C.S. and D.A. 6 months appointment and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

MIDDLESEX HOSPITAL, W.1. Applications are invited for the post of Full-time SENIOR REGISTRAR at the Arthur Stanley Institute for Rheumatic Diseases of The Middlesex Hospital ; the post provides for 8 sessions at the Arthur Stanley Institute and 3 sessions in the Physical Medicine Department of The Middlesex Hospital. Candidates should have completed a Senior Registrarship in General Medicine.

Further particulars are obtainable from the Administrator, The Arthur Stanley Institute, Peto-place, N.W.1, to whom applications, with the names of 3 referees, should be sent by 19th February, 1955.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) CASUALTY AND RECEIVING-WARD OFFICER (Senior House Officer) required for duty on 13th March, 1955.

Application forms may be obtained from the Physician-Superintendent and should be returned by 18th February with copies of not more than 3 testimonials.

NATIONAL HEART HOSPITAL, Maida Moreton, BUCKINGHAM. (Country Branch of the National Heart Hospital.) Applications are invited for the post of RESIDENT MEDICAL OFFICER at the Hospital's country branch. The appointment is for a period of 6 months from 1st April, 1955, but may be renewed for a further period not exceeding 6 months. The status of the post is that of a Senior House Officer and the salary is in accordance with the terms and conditions of service of hospital medical staff. The holder will be expected to attend on 1 day weekly at the Hospital in Westmoreland-street.

Applications, with copies of 3 recent testimonials, should be sent to me at Westmoreland-street, London, W.1, not later than Saturday, 12th February, 1955.

ROBERT G. E. WHITNEY, Secretary to the Board.

PARK HOSPITAL, Hither Green, London, S.E.13. LEWISHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Infectious Diseases Unit with duties in general medical and E.N.T. wards. The appointment is tenable for 1 year and may be either fully resident or resident only when on duty.

Applications, stating age, qualifications and experience, with copy testimonials or names of referees, should be addressed to the Secretary, Group Offices, Lewisham Hospital, London, S.E.13.

PLAISTOW MATERNITY HOSPITAL, Howards-road, Plaistow, London, E.13. RESIDENT OBSTETRIC OFFICER (House Officer, second or third post) required for 6 months commencing 1st April, 1955. The post is recognised for D.Obst. R.C.O.G.

Apply by 19th February to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, enclosing copies of recent testimonials.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER RESIDENT HOUSE SURGEON to Orthopædic, Fracture and Traumatic Department, E.N.T. Department, and SENIOR CASUALTY OFFICER, for a period of 6 months, vacant 22nd February, 1955.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR CASUALTY OFFICER at the Royal Free Hospital, Gray's Inn-road, London, W.C.1. The appointment is full time, resident, for 6 months. Duties to commence 1st April, 1955. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Senior House Officers.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 2nd March, 1955.

ROYAL FREE HOSPITAL. Applications are invited for the post of SENIOR REGISTRAR to the Infectious Diseases Department at the Royal Free Hospital, duties to commence 1st April. 1955. The appointment is for 1 year in the first instance. Candidates should be registered medical practitioners, hold a higher degree and have had experience of infectious diseases.

Formal application, giving details of experience, &c., together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 21st February, 1955.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. (279 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR required at above Hospital, vacant 1st April, 1955. Candidates may visit the Hospital by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Royal Northern Hospital, London, N.7, by 15th February, 1955.

ROYAL EYE HOSPITAL. King's College Hospital GROUP. Applications are invited for the post of SENIOR HOUSE OFFICER from 1st April, 1955.

Applications, with copies of recent testimonials, should be made to the Secretary, The Royal Eye Hospital, St. George's-circus, S.E.1.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. HOUSE OFFICER (recognised for D.C.H.). This appointment will be made for 2 periods of 6 months commencing 1st April, 1955, and 1st November, 1955 (leave intervening). First appointment as House Physician and second as House Surgeon and Casualty Officer.

Application forms may be obtained from the Secretary at Hackney-road, and should be returned with copies of not more than 3 testimonials on or before 14th February, 1955.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. SENIOR OBSTETRIC HOUSE SURGEON (Male or Female), Senior House Officer grade, for 6 months commencing 27th February, 1955. Post recognised for M.R.C.O.G.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London E.15, by 9th February, 1955.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. OBSTETRIC HOUSE SURGEON (Male or Female) House Officer third post, for 6 months, commencing 27th February, 1955. Successful candidate may be eligible for appointment as Senior Obstetric House Surgeon (Senior House Officer grade) for the following 6 months. Post recognised for M.R.C.O.G.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 9th February, 1955.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London E.15. PÆDIATRIC HOUSE PHYSICIAN (House Officer third post). Duties include some work in related departments—e.g., Diabetic Clinic, &c. 6 months appointment commencing as soon as possible. Post recognised for D.C.H.

Applications, with copies of testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 12th February, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment at the Lewisham Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 19th February, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Medicine to fill a vacancy in the approved trainee establishment at the Greenwich and Deptford Group of hospitals, as from 25th April, 1955. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 19th February, 1955.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of RESIDENT MEDICAL OFFICER in the grade of Senior House Officer, for duty at the Victoria Hospital for Children, Tite-street, Chelsea, S.W.3. Candidates for this post must have had resident hospital experience in the diseases of children. This post falls vacant on 22nd April, 1955, but the successful candidate will be required to take up Locum duties on 1st April, 1955.

Applications, giving details of age, education, qualifications, experience, and the names of 2 referees, should reach the undersigned not later than 26th February, 1955.

St. George's Hospital. P. H. CONSTABLE, House Governor.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of HOUSE SURGEON (pre- or post-registration) required immediately. Tenable for 6 months. Salary, &c., in accordance with national scale.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Superintendent.

ST. MARK'S HOSPITAL, City-road, London, E.C.1. Applications invited from Senior Registrars who have completed their training, or from Registrars who have completed their appointments, for the post of RESIDENT SURGICAL OFFICER. Part of time non-resident by arrangement. Salary at the rate of £1400 or £965 respectively. Appointment tenable for 6 months from 1st April, with possibility of further extension 6 months.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London, W.12, by 12th February.

ST. THOMAS'S HOSPITAL, London, S.E.1. Medical REGISTRARS (2 vacancies) for a period of 1 year in the first instance from 1st April, 1955.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 12th February.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for the following Senior House Officers :—

1 HOUSE PHYSICIAN on 15th May, 1955.
1 HOUSE SURGEON to the Orthopædic and Plastic Departments on 15th May, 1955.

Further particulars and form of application, which must be returned not later than 28th February, 1955, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WANSTEAD HOSPITAL, Hermon Hill, E.11. (191 Beds.) Applications are invited for the post of OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON, vacant 12th March, 1955. The appointment is recognised for the D.Obst.R.C.O.G.

Applications, with full details and copies of 2 recent testimonials, to be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. RESIDENT HOUSE SURGEON (general and genito-urinary) required 1st April. Pre-registration candidates considered.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary by 14th February.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, 2 RESIDENT HOUSE SURGEONS (Male) for general surgical duties. 6 months appointments : (1) vacant on 1st March, 1955 ; (2) on 8th March, 1955. Preference given to pre-registration candidates.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE requires RESIDENT HOUSE OFFICER (Male) for general medical and surgical duties (not suitable for pre-registration candidates).

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (pædiatrics) required at Ashton-under-Lyne General Hospital. Recognised for D.C.H.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs, as soon as possible.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. Required, SENIOR HOUSE OFFICER or HOUSE OFFICER (including pre-registration), according to experience.

Detailed applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. Senior HOUSE OFFICER (anæsthetics) required, resident. Recognised for D.A. and F.F.A.R.C.S. Extensive experience not necessary. Duties include list and emergency work in general surgery, gynæcology, obstetrics, and E.N.T. at Hospital in the Group.

Detailed applications to Secretary.

BIRMINGHAM. HEATHFIELD ROAD MATERNITY HOSPITAL, 134, Heathfield-road, BIRMINGHAM, 19. OBSTETRIC HOUSE SURGEON required on 1st April. Preference given to candidates with previous medical and surgical experience. 50-Bed Maternity Unit with 18-Cot Premature Baby Unit attached. Large Antenatal Department. Appointment recognised for D.Obst.R.C.O.G.

Detailed applications, with copies of 3 recent testimonials, not later than 12th February, to Hospital Secretary, Marston Green Maternity Hospital, Berwicks-lane, Marston Green, near Birmingham.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15

Whole-time REGISTRAR in Thoracic Surgery for United Birmingham Hospitals. Joint appointment ; duties equally divided between both Boards. Candidates must have good surgical training and some experience in thoracic surgery. Higher qualification an advantage.

(2) Birmingham (Selly Oak) Hospital Management Committee, Oak Tree-lane, Birmingham, 29 Birmingham Accident Hospital, Birmingham, 15 (215 Beds)

(*a*) SURGICAL REGISTRAR. Special experience available in treatment of shock and infection, and principles of plastic surgery in connection with Medical Research Council Burns Unit. Previous experience not essential. F.R.C.S. advantageous.

(*b*) SURGICAL REGISTRAR. Duties with Accident Surgical Team. Possibility of transfer to Burns Unit. General surgical experience essential. Higher qualification advantageous.

Candidates may visit Hospital.

(3) Mid-Worcestershire Hospital Management Committee, Birmingham-road, Bromsgrove

REGISTRAR in Psychiatry. Duties mainly at Lea Colony, Bromsgrove, and Lea Castle Colony, Kidderminster (aggregating 402 Beds). Experience specialty desirable. Hospitals recognised for D.P.M. Non-resident. Candidates may visit hospitals.

(4) Shrewsbury Group Hospital Management Committee, Royal Salop Infirmary, Shrewsbury

Whole-time REGISTRAR in Psychiatry, for Shelton Hospital, Shrewsbury (1000 Beds). Hospital approved training establishment. Previous experience general medicine desirable.

(5) South Warwickshire Hospital Group, 50, Hollywalk, Leamington Spa

Whole-time REGISTRAR in Orthopædics. Duties mainly at Warwick Hospital (350 Beds including 52 orthopædic). Recognised for F.R.C.S. Experience specialty essential and higher qualifications an advantage. Candidates may visit Hospital.

Application forms from Group Secretaries, to be returned before 21st February, 1955.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a post of SENIOR HOUSE OFFICER (surgical) at the North Lonsdale Hospital, Barrow-in-Furness. Post recognised for F.R.C.S. National conditions and salary scale.

Applications to Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Resident HOUSE PHYSICIAN (pre-registration post) required 18th February, 1955.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 recent testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by not later than 9th February, 1955.

BIDEFORD AND DISTRICT HOSPITAL, North Devon. (51 Beds.) HOUSE OFFICER post vacant 1st April. Flat available for married officer.

Applications to Group Secretary, 19, Alexandra-road, Barnstaple.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (Midway between London and Cambridge—Main Line from Liverpool Street.) Applications are invited for post of SENIOR HOUSE OFFICER (pathology), resident. Appointment to commence in April for period of 1 year. Salary £745, less £130 p.a. in respect of residential emoluments.

Applications, stating qualifications, nationality, age and experience, with copies of recent testimonials or names of 2 referees, to Hospital Secretary.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (Midway between London and Cambridge. Main Line from Liverpool Street.) Applications are invited for the following appointments :—

HOUSE OFFICER (medicine), Male or Female. Pre-registration or first or second post—to commence 7th April, 1955, for 6 months. Salary £425–£475, less £125 p.a. in respect of resident emoluments.

SENIOR HOUSE OFFICER (medicine), for duties mainly in Tuberculosis Unit of 43 male and 23 female beds. Salary £745 p.a., less £130 in respect of residential emoluments. To commence 1st April, 1955, for 12 months.

Applications, stating qualifications, nationality, age and experience, with copies of recent testimonials or names of 2 referees, to Hospital Secretary.

BLACKBURN ROYAL INFIRMARY. (262 acute beds.) JUNIOR HOSPITAL MEDICAL OFFICER (orthopædics and casualty) required. Post is of limited tenure up to 4 years and is recognised for F.R.C.S.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) SENIOR HOUSE OFFICER (Orthopædic and Casualty Department). Recognised for 6 months casualty training for Final F.R.C.S. examination. Provides excellent opportunity for gaining experience in a department under the control of a Consultant Orthopædic Surgeon.

Applications, with references, should be sent to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT OBSTETRIC HOUSE OFFICER for post vacant 25th February, 1955. The appointment is recognised for the F.R.C.S. examination and for the Diploma in Obstetrics.

Applications to the Deputy Hospital Secretary.

BRADFORD A AND B HOSPITAL MANAGEMENT COMMITTEES. JUNIOR HOUSE OFFICER required for newly formed active Geriatric Admission Unit. The major portion of the duties will be carried out at St. Luke's Hospital, Bradford.

Applications, stating age, nationality, qualifications and experience, and copies of testimonials, to the Secretary, Royal Infirmary, Bradford.

BRADFORD ROYAL INFIRMARY. Senior House Surgeon (Thoracic Unit), vacant 1st March, 1955. Salary £745 p.a., less £150 p.a. residential emoluments.

Applications, stating age, experience, nationality and qualifications, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. House Surgeon (general), vacant 20th March, 1955. Recognised for F.R.C.S. and pre-registration purposes. Salary £425–£525 p.a., less £125 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. House Surgeon (general and urology), vacant 22nd March. Recognised for F.R.C.S. and pre-registration purposes. Salary £425–£525 p.a., less £125 p.a. residential emoluments.

Applications, stating age, experience, nationality, and qualifications with copy testimonials, to Secretary.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. (544 Beds.) Applications invited for post of HOUSE PHYSICIAN in the medical and pædiatric wards of above Hospital. First, second, third, or pre-registration post ; tenable for 6 months.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP OF HOSPITALS. HOUSE SURGEON required in the E.N.T. Department of the above Group, vacant in March. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, age, and qualifications, and naming 2 referees, to be sent to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRIGHTON. SUSSEX EYE HOSPITAL, Eastern-road, BRIGHTON, 7. (56 Beds.) SENIOR HOUSE SURGEON (Senior House Officer) and HOUSE SURGEON (House Officer) required mid-April. Posts recognised for F.R.C.S. under 23 (b).

Applications, stating age, qualifications and experience, together with the names of 2 referees, to the Administrative Officer.

BOLTON. THE ROYAL INFIRMARY. (237 Beds.) BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

RESIDENT SENIOR HOUSE OFFICER in Medicine. Now vacant, tenable for 12 months.

RESIDENT HOUSE SURGEON for general surgical duties. Now vacant, tenable for 6 months, recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BRISTOL. UNITED BRISTOL HOSPITALS. General HOSPITAL BRANCH. Applications are invited for the resident post of E.N.T. SENIOR HOUSE SURGEON. The post is vacant from 1st March, and is tenable for 6 months.

Applications, on forms to be obtained from the Secretary to the Board, Royal Infirmary Branch, Bristol, 2, should be returned not later than Monday, 21st February, 1955.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics (resident or non-resident). The post, which will be limited to a tenure of 4 years in the first instance, is based on Bury General Hospital, but will include duties at other hospitals in the Group, and provides wide experience. The anæsthetic staff comprises, in addition, a Consultant and a Senior Hospital Medical Officer.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. CLINICAL PATHOLOGIST (Senior House Officer grade). Resident or non-resident, with duties mainly at Bury General Hospital. The post affords opportunities for gaining experience in all branches of pathology.

Apply, stating nationality, qualifications, &c., and names of 2 referees, to H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Obstetrics and Gynæcology required.

Further particulars and form of application from Group Secretary, 44, Cathedral-road, Cardiff.

CARLISLE. CUMBERLAND INFIRMARY. Applications are invited for the following appointments which are for a 12 months period.

1 SENIOR HOUSE OFFICER (general surgery). Recognised for F.R.C.S.

1 SENIOR HOUSE OFFICER (orthopædic and fracture).

1 SENIOR HOUSE OFFICER (specials—eye and E.N.T.).

Applications, stating age, and giving details of education, training and experience, together with the names of 2 referees, should be sent to the Secretary as soon as possible.

CARLISLE. GARLANDS HOSPITAL. Garlands Hospital MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER at above Mental Hospital (1000 patients). Resident post. Salary scale £775–£50–£1075 p.a. Terms and conditions of service of hospital medical staff. Furnished or unfurnished flat available, suitable for married man.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, to be submitted to the Medical Superintendent as soon as possible.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. (741 Beds.) SURGICAL REGISTRAR to 1 of the 2 general Surgical Units, comprising 70 Beds.

Application forms, obtainable from the Group Secretary, Management Committee Offices, St. Helier Hospital, Carshalton, to be returned not later than 12th February.

CARSHALTON. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 840 Beds.) 2 HOUSE PHYSICIANS (Senior House Officers). Care of acute medical, rheumatism and poliomyelitis beds. Positions vacant end of March.

Applications, stating age, qualifications and experience, with copies of 3 testimonials, should reach the Secretary by 14th February, 1955.

CHEPSTOW, MONMOUTHSHIRE. ST. LAWRENCE HOSPITAL. (100 plastic surgery, 50 orthopædic beds.) PLASTIC SURGERY, JAW INJURIES AND BURNS CENTRE. SENIOR HOUSE OFFICER in Plastic Surgery required. Previous experience in specialty not essential. The successful candidate will receive a thorough training in plastic surgery and burns. Hospital intakes from most of Wales and provides extensive experience. There is another Senior House Officer in Plastic Surgery, and also a Senior House Officer in Orthopædics. Salary £745, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary, 64, Cardiff-road, Newport, Mon.

CLACTON AND DISTRICT HOSPITAL, Clacton-on-Sea. (58 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds.) CASUALTY OFFICER required. Appointment recognised for pre-registration purposes.

For interview please apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds.) 2 HOUSE SURGEONS required. Posts recognised for Pre-registration Service and F.R.C.S. training.

For interview please apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (188 Beds. Recognised by the Royal College of Surgeons and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical). Salary £425, £475, and £525 p.a., according to experience, less £125 p.a. for residential emoluments. Vacancy mid-March.

Applications, stating age, qualifications, experience, and nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer grade) for period 5th–18th March inclusive. Previous experience as Casualty Officer desirable.

Apply, giving full particulars, to—

GEORGE A. PAINES, Group Secretary,
Croydon Hospital Management Committee.
General Hospital, Croydon.

CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum Tenens ANÆSTHETIC REGISTRAR (resident), whole-time, for Group duties mainly at General Hospital (200 Beds) for period 21st February–31st March in first instance. Candidates must have experience in anæsthetics and possession of D.A. an advantage.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned immediately.

DEWSBURY. STAINCLIFFE GENERAL HOSPITAL, Healds-road, DEWSBURY, YORKS. HOUSE OFFICER (general medicine and dermatology), vacant 1st March and tenable for 6 months. Recognised pre-registration post. The Hospital has 68 acute medical beds.

Applications, with full details and quoting this journal, to the Administrative Officer at the Hospital.

DONCASTER ROYAL INFIRMARY. (330 Beds.) Doncaster HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON. Approved as pre-registration post and recognised for F.R.C.S.

Applications to the Secretary to the Committee at the Doncaster Royal Infirmary.

DURHAM. DRYBURN HOSPITAL. (309 Beds.) House OFFICER (general surgery). Post vacant 1st February, 1955. Recognised under F.R.C.S. regulations and for pre-registration purposes.

Applications, with names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

DURHAM. COUNTY HOSPITAL. (116 Beds.) Resident HOUSE SURGEON required immediately in Orthopædics and Casualty. Post recognised for pre-registration purposes. This post offers facilities for good and varied experience in a busy Orthopædic and Accident Hospital which serves a wide mining and industrial area.

Apply, giving age, experience, and names of 2 referees, to the Group Secretary, Dryburn Hospital, Durham.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) SURGICAL REGISTRAR, Peterborough Memorial Hospital. General Hospital with busy Surgical Department providing wide range of work and experience. Appointment for 1 year, renewable for second year.

(2) SURGICAL REGISTRAR, West Norfolk and King's Lynn General Hospital (144 Beds). Post provides wide range of experience and is recognised for F.R.C.S. Appointment for 1 year, renewable for second year.

(3) ANÆSTHETIC REGISTRAR, West Norfolk and King's Lynn Hospital (144 Beds). Single accommodation available. Post provides wide experience and recognised for D.A. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 21st February, 1955. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary at the hospital.

EDINBURGH CENTRAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited from registered medical practitioners and pre-registration graduates for resident appointments for 6 months commencing 1st April, 1955. National Health Service scale.

Royal Hospital for Sick Children
1 HOUSE SURGEON (E.N.T.).
3 HOUSE PHYSICIANS.
2 HOUSE SURGEONS.
Princess Margaret Rose Hospital
2 HOUSE SURGEONS.
Chalmers Hospital (Gynæcological and Children's Surgical Annexe).
1 HOUSE SURGEON.

Applications, stating age, qualifications and experience, and names of 2 referees, to be sent within 14 days of this notice to Medical Superintendent, 18, Rillbank-terrace, Edinburgh, 9.

EDINBURGH. CHALMERS HOSPITAL. Applications are invited for the appointment of NON-RESIDENT SENIOR HOUSE OFFICER in General Surgery (with some E.N.T.) from medical practitioners qualified at least 1 year. Appointment is for 1 year commencing 1st June, 1955, at National Health Service salary of £745 p.a.

Applications, with full particulars and names of 2 referees, should be sent to the Medical Superintendent, Edinburgh Central Hospitals, 18, Rillbank-terrace, Edinburgh, 9, within 14 days of this notice.

EPPING GROUP HOSPITAL MANAGEMENT COMMITTEE. ST. MARGARET'S HOSPITAL, EPPING (485 Beds), AND HONEY LANE HOSPITAL, WALTHAM ABBEY (118 Beds). HOUSE PHYSICIANS, 2 vacancies occurring 20th March, 1955, for fully registered practitioners. Salary on national scale, less deduction for board, lodging, &c. The successful candidates will be required to reside for 3 months at each Hospital.

Applications, with copies of 2 recent testimonials, to the Group Secretary, St. Margaret's Hospital, Epping, by 18th February, 1955.

FARNBOROUGH HOSPITAL, Farnborough, Kent. (800 Beds.) SENIOR HOUSE OFFICER in Anæsthetics required for 1 year, from 22nd March, 1955. Recognised for D.A. and F.F.A.R.C.S.

Apply, stating age, qualifications with dates and experience, and naming 3 referees, to the Administrative Officer by 19th February, 1955.

FARNBOROUGH HOSPITAL, Farnborough, Kent. CASUALTY OFFICER (Senior House Officer) required immediately for 1 year. Deduction for residence £150.

Apply, giving age, qualifications with dates, and experience, and naming 3 referees, to the Administrative Officer.

GLASGOW. ROYAL HOSPITAL FOR SICK CHILDREN, YORKHILL, GLASGOW. 2 JUNIOR HOSPITAL MEDICAL OFFICERS (resident) required for the Medical Pædiatric Units of the above Hospital. National Health Service salary and conditions of service.

Applications, stating age, and giving full details of qualifications and experience, with the names of 3 referees, to be lodged with the Secretary of the Board of Management for Glasgow and District Children's Hospitals, 86, St. Vincent-street, Glasgow, C.2, by 26th February.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL, DENE SIDE, GREAT YARMOUTH. HOUSE SURGEON (Male or Female) required. Post vacant 1st April, 1955. The Hospital is staffed by a Consultant General Surgeon and a Consultant E.N.T. Surgeon, and is regularly visited by Consultant staff from the Norfolk and Norwich Hospital. The post is a pre-registration post at a salary of £425, £475, or £525 p.a. according to experience, less £125 p.a. for residence. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications, and experience, with names of 2 referees, to Hospital Secretary.

GUILDFORD. ST. LUKE'S HOSPITAL. South West METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR (resident or non-resident) at above Hospital. Preference will be given to applicants with higher qualifications. The Hospital may be visited by arrangement direct.

Application forms obtainable from, and should be returned not later than 26th February, 1955, to, Secretary, Guildford Group Hospital Management Committee, St. Luke's Hospital, Guildford.

HADDINGTON MENTAL HOSPITAL, East Lothian. JUNIOR HOSPITAL MEDICAL OFFICER (Locum), Male or Female, required at once for the above small Mental Hospital. Some previous psychiatric experience desirable but not essential. Temporary accommodation available in Haddington.

Applications to the Group Physician-Superintendent, Dr. E. J. C. HEWITT, Rosslynlee Hospital Midlothian (Tel. : Roslin 258).

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. (General—705 Beds.) HOUSE PHYSICIANS (resident), required. Appointments recognised for M.D. (Lond.) and for pre-registration House Officers.

Apply, stating age, qualifications, nationality, experience, together with copies of not more than 3 recent testimonials, to Medical Director by 14th February.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. (705 Beds, including 70 maternity and 25 gynæcological.) SENIOR REGISTRAR in Obstetrics and Gynæcology. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Pield Heath-road, Uxbridge, Middlesex, by 14th February.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. Applications are invited for the post of RESIDENT HOUSE PHYSICIAN, vacant 1st March, 1955. Recognised as pre-registration post.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator as soon as possible.

HOUNSLOW (GENERAL) HOSPITAL, Staines-road, HOUNSLOW, MIDDLESEX. (81 Beds.) RESIDENT CASUALTY OFFICER (Senior House Officer grade) required at above Hospital. Post vacant 13th March, 1955.

Applications, with testimonials, &c., to Hospital Secretary.

HULL. MATERNITY HOSPITAL. (74 Beds.) Hull A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointments of 2 HOUSE OFFICERS (obstetrics). 1 post vacant 1st April, the other 1st May, and are tenable for 6 months. The posts are recognised for the M.R.C.O.G. examinations.

Applications to Hospital Secretary, Maternity Hospital, Hedon-road, Hull, as soon as possible, stating which appointment desired.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required from 20th February, 1955. Registration or pre-registration post. 6-monthly term; counts toward the D.C.H. qualification. Salary according to national scale.

Send replies, with testimonials, to the Hospital Secretary.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON (resident) required. Pre-registration post, vacant 3rd March, 1955. National scale of salary. Apply to Hospital Administrator.

ILFORD MATERNITY HOSPITAL, Eastern-avenue, ILFORD. There will be a vacancy for a SENIOR HOUSE OFFICER at the above Hospital on 14th March, 1955. Salary will be at the rate of £745 p.a., less emoluments. This post is recognised for training for the D.Obst.R.C.O.G.

Applicants should have been registered not less than 1 year and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

ILKLEY. MIDDLETON HOSPITAL. (430 Beds.) RESIDENT SENIOR HOUSE OFFICER (surgical) required for Major Thoracic Surgical Unit at the above Hospital.

Applications, stating age, nationality, qualifications and experience, to Hospital Secretary.

IPSWICH BOROUGH GENERAL HOSPITAL, Heath-road, IPSWICH. (270 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Fracture and Orthopædic Department). The post, which becomes vacant on 3rd March, 1955, is normally of 1 years duration. It is recognised as part of the necessary surgical experience for the Final F.R.C.S.

Applications, stating age, qualifications and experience, together with recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. FOXHALL HOSPITAL. (102 Beds for chest diseases.) SENIOR HOUSE OFFICER required for duties in surgical and medical wards. Hospital is fully equipped for all forms of investigation and treatment of pulmonary tuberculosis and other chest diseases, including major thoracic surgery. Experience of management of thoracic surgical cases an advantage but not essential. A flat or unfurnished bungalow is available. Further information from Dr. G. R. McNab, Physician-Superintendent. The post is now vacant.

Applications, including the names of 3 referees, to the Secretary, Ipswich Group Hospital Management Committee at East Suffolk and Ipswich Hospital, Anglesea-road, Ipswich.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER for Geriatric Unit. Resident. Full-time.

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 15th February, 1955.

KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL. (112 Beds.) HOUSE SURGEON (pre-registration), required immediately at the above Hospital.

Applications, with the names of 3 referees, to the Hospital Secretary.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) Applications are invited for HOUSE OFFICER (anæsthetics). The post is recognised for D.A.

Applications to Hospital Secretary.

LEICESTER ISOLATION HOSPITAL AND CHEST UNIT. (266 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (chest and infectious diseases) required. This Hospital offers interesting work, having Units for infectious diseases and all forms of chest diseases, complete Thoracic Surgical Unit and outpatient sessions for chest diseases and cardiology. Single accommodation is available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LIVERPOOL. 6. NEWSHAM GENERAL HOSPITAL. (1304 Beds.) Applications are invited from registered medical practitioners (Male or Female) for appointment as JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER, the grading to depend upon the qualifications and experience of the applicant appointed. The post may be resident or non-resident, and duties are mainly the initial examination and treatment of new inpatients passing through the admission-room, with a proportion of clinic work to suit the interests and experience of the successful candidate. Salary: Junior Hospital Medical Officer £775–£50–£1075, Senior House Officer £745 p.a. In both cases less £130 p.a. if the applicant appointed is resident.

Applications, on forms obtainable from the Physician-Superintendent at the Hospital, to be returned completed as soon as possible.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT. (99 Beds.) SENIOR HOUSE SURGEON required. Salary £745 p.a., less £150 for residence. The Hospital has a Consultant General Surgeon and is regularly visited by Consultants in all specialties from the Norfolk and Norwich Hospital.

Applications, stating age, qualifications and experience, with names and addresses of 2 referees, to Hospital Secretary.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts:—

General Medicine

(*a*) Halifax Group (110 general medical, 380 geriatric beds). Duties divided equally between general medicine and geriatrics. (Non-resident but accommodation may be arranged for a single man.)

(*b*) Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions), and the Rheumatism Clinic, General Infirmary at Leeds (2 sessions). Resident at Royal Bath Hospital, Harrogate.

General Surgery

Hull A Group, mainly at Western and Kingston General Hospitals (150 general surgical beds) (resident or non-resident). Recognised for F.R.C.S.

Obstetrics and Gynæcology

Hull A Group (84 obstetric and 74 gynæcological beds). Recognised for M.R.C.O.G. (resident or non-resident).

Orthopædic Surgery

Hull A Group (50 orthopædic beds), Hull B Group and East Riding Group (50 orthopædic beds) (non-resident). Includes some duties in the Casualty Department at the Hull Royal Infirmary.

Psychiatry

Oulton Hall Hospital, near Wakefield, and affiliated Mental Deficiency Colonies (aggregating 780 beds) (non-resident). Facilities for attendance at the Leeds University will be provided if this successful candidate is studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 10th February, 1955.

LEEDS, 2. PUBLIC DISPENSARY AND HOSPITAL. LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (Senior House Officer) at the above Hospital. The appointment will be for a period of 1 year. Salary in accordance with the agreed terms and conditions of service of hospital medical and dental staffs, with an appropriate deduction in respect of board, lodging, &c.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited from registered practitioners for post of CASUALTY OFFICER, vacant 23rd February. Recognised for F.R.C.S. Salary on House Officer scale, plus £50 p.a.

Applications, stating age, qualifications, nationality, and experience, with copies of testimonials or names of 3 referees, to Hospital Secretary.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Post vacant now. Salary £745 a year, with a deduction of £.50 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in the Board's Non-tuberculous Thoracic Surgery Unit of 58 Beds at Park Hospital, Davyhulme. 1 year appointment renewable. Post now vacant.

Application forms from Secretary, Park Hospital, Davyhulme, Urmston.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications invited for the post of REGISTRAR (non-resident) in the Psychiatric Unit of the Booth Hall Children's Hospital, Blackley, Manchester, 9. This is the Regional Hospital Centre for child psychiatry and applicants must have had suitable training.

Applications, with names of 2 referees, to Group Secretary, Booth Hall Hospital, from whom further particulars may be obtained.

MANCHESTER REGIONAL HOSPITAL BOARD. Regis-TRAR in Venereology in the Bolton (main centre), Bury and Wigan areas. Post vacant 1st April, 1955.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, should be sent immediately to Group Secretary, Bolton and District Hospital Management Committee, The Royal Infirmary, Bolton.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Pathology in the Wigan and Leigh Hospital Management Committee Group Laboratory established at the Royal Albert Edward Infirmary, Wigan. Post vacant 1st March, 1955. The Laboratory is well equipped and recognised for the D.Path. There are excellent opportunities for gaining extensive experience in all branches of pathology.

Applications, with full particulars, and names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan-lane, Wigan.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. 1 HOUSE OFFICER (pædiatrics) required, post-registration, for new post commencing 1st April, 1955. The Hospital has a Midwifery Unit of 73 Beds and there are also thoracic surgery beds on the Pædiatric Unit. Hospital recognised for training for Diploma in Child Health.

Forms from Secretary.

MANCHESTER. BAGULEY HOSPITAL, Wythenshawe. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER vacancy at the above Hospital, which has 402 Beds for tuberculous patients and is the principal thoracic surgical centre for the Manchester Region. The successful candidate will receive training in the medical and surgical wards and in the chest clinic.

Applications, with full details, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANSFIELD. HARLOW WOOD ORTHOPÆDIC HOSPITALS. (328 Beds. Recognised for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (orthopædics) required. Duties include attendance at associated outpatient clinics and hospitals and the treatment of complicated traumatic cases and so give wide experience in all types of orthopædic surgery. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

MITCHAM. CUMBERLAND HOSPITAL, Whitford Gardens, MITCHAM, SURREY. (100 Beds.) Applications are invited for the post of MEDICAL OFFICER (Registrar) in Tuberculosis, resident or non-resident if within 5 mile radius of Hospital. Duties also in Thoracic Unit, St. Helier Hospital. Experience in specialty essential.

Forms of application, returnable by 19th February, obtainable from the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

NEWCASTLE GENERAL HOSPITAL. (847 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. The resident post of SENIOR HOUSE OFFICER (Male), Urological Unit (51 Beds), becomes vacant at the end of February and is tenable for 12 months.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 18th February, 1955.

NEWCASTLE REGIONAL HOSPITAL BOARD. Special AREA FOR CUMBERLAND AND NORTH WESTMORLAND. EAST CUMBERLAND GROUP OF HOSPITALS. SURGICAL REGISTRAR (resident), whole-time, required for 1 year in the first instance, with the likelihood of extension. Main duties at the Cumberland Infirmary, Carlisle (322 Beds), where the Registrar will have duties in the Casualty Department and in the wards. The post is recognised under the F.R.C.S. regulations.

Applications, together with names and addresses of 1–3 referees, and/or 1–3 testimonials, to the Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 14 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the resident appointment of SENIOR HOUSE OFFICER to the Department of Obstetrics and Gynæcology. The appointment is for 1 year and will be subject to the terms and conditions of service of hospital medical staff. The salary will be at the rate of £745 p.a., subject to the appropriate deductions.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR SURGICAL REGISTRAR (resident in Hospital or within 5 miles), King George Hospital, Ilford, Essex. Transitional appointment open to candidates who have since November, 1950, completed or substantially completed training as Senior Registrars. Appointment subject to review after 1 year.

Applications in triplicate, with 3 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 19th February, 1955.

NORTH GLOUCESTERSHIRE CLINICAL AREA. South-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of LOCUM TENENS in the Registrar grade in the Department of Obstetrics and Gynæcology in the North Gloucestershire Clinical Area and based on the City General Hospital, Gloucester, for a period of 2–3 months commencing 21st February, 1955.

Applications, stating age, qualifications and experience, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (orthopædic and fracture). The post offers exceptional experience in traumatic surgery. Duties to commence as soon as possible.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM. HIGHBURY HOSPITAL. Senior SURGICAL HOUSE OFFICER required at the above Hospital. Good opportunity for obtaining experience in all types of general surgery. Duties to commence on 1st March, 1955.

Applications, stating age, qualifications and experience, together with copies of testimonials to be sent to Group Secretary, Nottingham General Hospital.

OXFORD. UNITED OXFORD HOSPITALS. Applica-tions invited for post of HOUSE SURGEON to Accident Service, Radcliffe Infirmary, for 6 months, with effect from 1st April, 1955 (45 Beds). Duties include 2 months head injuries, 2 months male and 2 months female and children's wards, in addition to Casualty Department.

Apply, stating age, qualifications and experience, together with names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford, by 14th February.

OXFORD. UNIVERSITY OF OXFORD. United Oxford HOSPITALS. Applications are invited for the non-resident post of SENIOR REGISTRAR in Ophthalmology. The appointment will be for 1 year in the first instance and eligible, subject to satisfactory service, for extension to 4 years. Preference will be given to candidates with a higher qualification in ophthalmology. Details of the appointment from the Administrator, United Oxford Hospitals, Radcliffe Infirmary, Oxford.

Applications on forms obtainable from the Secretary, Joint Committee for Senior Registrars, 43, Banbury-road, Oxford, must reach him by 15th February, 1955.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP.

Department of Obstetrics and Gynæcology

HOUSE SURGEON in Obstetrics and Gynæcology, vacant 17th April, 1955. Recognised for the Membership of the Royal College of Obstetricians and Gynæcologists. Wide experience can be obtained in obstetrics including antenatal and postnatal clinics.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. Applications invited from duly qualified and registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, vacant 1st April, 1955. There will be additional duties at the Flete Maternity Home, and the Alexandra Maternity Home, which are parts of the Department. Candidates should have had previous experience in a Department of Obstetrics and Gynæcology. The appointment will be for a period of 12 months. Salary £745 p.a. Terms and conditions of service are in accordance with the National Health Service terms. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination of the College.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, should be sent to ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

GYNÆCOLOGICAL HOUSE SURGEON for duties at Queen Alexandra Hospital (50 gynæcological beds), vacant now. Post recognised for M.R.C.O.G. Pre-registration post. At the end of 6 months successful candidate would be offered post at St. Mary's Hospital, Portsmouth (50 obstetric, 40 gynæcological beds). Recognised for M.R.C.O.G. and D.Obst.R.C.O.G.

Royal Portsmouth Hospital

SENIOR HOUSE SURGEON (70 surgical beds), vacant now.

HOUSE OFFICER in the Traumatic and Orthopædic Department (105 beds), vacant now.

Saint Mary's Hospital

HOUSE PHYSICIAN (pædiatric), vacant 16th February. Pædiatric Unit of 53 Beds, and the post is recognised for candidates preparing for the D.C.H.

Infectious Diseases Hospital (310 Beds—Fever and T.B.)

SENIOR HOUSE OFFICER, vacant 1st May.

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.
35, Grove-road South, Southsea.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts vacant on 1st April, 1955. Paragraph 10 (b) appointments :—

Petersfield General Hospital

Appointment of E.N.T. SURGEON (1 session per week).

Heathside Geriatric Hospital, Petersfield

Appointment of GENERAL PRACTITIONER (1 session per week).

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.
35, Grove-road South, Southsea.

PRESTON ROYAL INFIRMARY. Preston and Chorley HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Pædiatrics required ; post vacant now. Duties at Preston Royal Infirmary and Sharoe Green Hospital ; post recognised for D.C.H.

Applications, with names of 3 referees, to Group Secretary, Royal Infirmary, Preston.

READING. BATTLE HOSPITAL. (374 Beds.) Appli-cations are invited from registered and provisionally registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON in the Area Accident and Orthopædic Department, vacant 1st March, 1955. F.R.C.S. required. Also casualty duties. Salary £425–£525 p.a., less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female), for the resident post of JUNIOR HOUSE PHYSICIAN (pædiatric and E.N.T.), vacant 15th March, 1955, for 6 months.

Write, stating age, qualifications with dates, nationality, together with 1 copy of recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female) for the resident post of JUNIOR HOUSE SURGEON (E.N.T.), vacant 21st February, 1955. Salary £425–£525 p.a., less £125 board-residence.

Write, stating age, qualifications with dates, nationality, with copy of 1 recent testimonial, to Secretary.

ROCHDALE INFIRMARY. Rochdale and District Hospital Management Committee. HOUSE SURGEON required at the above Infirmary early March. Pre-registration candidates eligible. Post recognised for 6 of the 12 months F.R.C.S. experience.

Apply to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs, at once.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited for RESIDENT SENIOR HOUSE OFFICER (surgery). Post recognised for F.R.C.S. and vacant 1st March, 1955.

Applications, stating age, &c., to be sent to the undersigned by 11th February, 1955. J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER in Pathology required in this large general hospital containing well-equipped laboratory where excellent opportunities exist for gaining extensive experience.

Applications should be sent immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (2) required from 23rd February, 1955, in the General Surgical Unit at the above Hospital. Recognised for F.R.C.S. Open to either pre-registration applicants or to fully qualified practitioners. This very active general surgical unit of approximately 100 beds affords ample opportunity for candidates to obtain first-class tuition and experience.

Applications should be forwarded immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit. The service consists of 100 beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as early as possible.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery) required from 1st March, 1955. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent, stating also names of 2 referees.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Dermatology. Applications are invited for the post of REGISTRAR in Dermatology at Dundee Royal Infirmary, a General Teaching Hospital of 510 Beds associated with the University of St. Andrews. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 19th February, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in E.N.T. Surgery in the Edinburgh Northern Group of hospitals. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 26th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR for duties in Hæmatology, based at the Southern General Hospital, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 26th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Surgery, based at the Southern General Hospital, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 26th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Radiodiagnosis, based at the Royal Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 26th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Psychiatry based at Hawkhead Mental Hospital, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 26th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Radiotherapy, based at the Western Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 26th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Bacteriology based at the Western Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 28th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Dermatology, based at the Western Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 26th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Ophthalmology, based at the Eye Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 26th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Tuberculosis based at Robroyston Hospital, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 28th February, 1955.

SALISBURY GENERAL HOSPITAL. Salisbury Group Hospital Management Committee. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR to the Obstetric and Gynæcological Department at above Hospital vacant 12th May. The Unit comprises 40 obstetric beds and 35 gynæcological beds and is recognised for the Diploma and Membership of the Royal College.

Application forms may be obtained from, and must be returned to, the Group Secretary, Odstock Hospital, Salisbury, by 26th February.

SHEFFIELD NATIONAL CENTRE OF RADIOTHERAPY. SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (radiotherapy) required. Post becomes vacant on 1st March, 1955. Candidates should be in possession of Part 1 of D.M.R.(T.). Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospita Board, Old Fulwood-road, Sheffield, by 14th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the non-resident post of ORTHOPÆDIC REGISTRAR to the Royal Hospital Unit. Post vacant 25th March.

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, immediately.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the following appointments :—

(*a*) NON-RESIDENT SENIOR REGISTRAR in Radiology at the Royal Infirmary/Royal Hospital Units. Post vacant. Candidates should hold a Diploma in Diagnostic Radiology. The appointment is for 1 year in the first instance and will be reviewed annually. It has been agreed in principle between the Board of Governors of The United Sheffield Hospitals and the Sheffield Regional Hospital Board that the appointment, if extended to the full period of 4 years, will be divided, subject to satisfactory work and progress, between The United Sheffield Hospitals and a hospital in the Region.

Closing date for applications 19th February, 1955.

(*b*) NON-RESIDENT SENIOR HOUSE OFFICER to the Dermatology Department, Royal Infirmary Unit.

(*c*) RESIDENT SENIOR HOUSE OFFICER (obstetrics) at the Jessop Hospital for Women. Post vacant from 1st April, 1955.

Applications for the above posts should state age, qualifications and experience and give the names of 3 referees and should be addressed as follows :—

For post (*a*) : The Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

For post (*b*) : The Superintendent, Royal Infirmary, Sheffield, 6.

For post (*c*) : The Superintendent, Jessop Hospital for Women, Leavygreave-road, Sheffield, 3.

Copy testimonials may be sent for posts (*b*) and (*c*).

SHEFFIELD. CITY GENERAL HOSPITAL. Resident SENIOR HOUSE OFFICER (or HOUSE OFFICER—pre-registrational post) in General Medicine, vacant 22nd March.

Apply, giving details of age, qualifications, present and previous appointments, with dates and the names of 2 persons for reference, to the Group Secretary at Nether Edge Hospital, Sheffield, 11.

SHEFFIELD. CITY GENERAL HOSPITAL. Applications are invited for the resident appointment of HOUSE SURGEON (general surgery), recognised pre-registration post. Vacant immediately.

Applications, giving full details of age, nationality, qualifications present and previous appointments if any, and the names of 2 persons to whom reference may be made, should be forwarded to W. STANSFIELD at Nether Edge Hospital, Sheffield, 11.

SHEFFIELD. LODGE MOOR HOSPITAL. (496 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (infectious diseases) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. GYNÆCOLOGICAL HOUSE SURGEON. 50 gynæcological beds and 2 House Surgeons. Post recognised for M.R.C.O.G. Vacant 14th March, 1955.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. SHELTON MENTAL HOSPITAL. (1000 Beds.) SHREWSBURY HOSPITAL GROUP. JUNIOR HOSPITAL MEDICAL OFFICER. Appointment for 1 year in first instance. Residential accommodation available.

Applications to Medical Superintendent not later than 19th February, 1955.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum SENIOR HOUSE OFFICER (casualty) required.

Applications, with 2 testimonials, to Hospital Secretary.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Surgery to fill a vacancy in the approved trainee establishment at the Brighton and Lewes Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 19th February, 1955.

SOUTHEND-ON-SEA GENERAL HOSPITAL. Applications are invited for the post of RESIDENT ANÆSTHETIST vacant on 1st April, 1955. Senior House Officer grade, salary £745 p.a., less £140 p.a. for full residential emoluments. Appointment for 18 months, involving duties for 6 months at the General Hospital, Southend, followed by 6 months at the General Hospital, Rochford, and 6 months at hospitals in the Group generally. This combined appointment has been recognised as fulfilling the conditions of the F.F.A.R.C.S. and the D.A.

Applications, &c., should reach the undersigned at the Hospital by 17th February, 1955. J. C. FIELD, Secretary.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) Resident Locum Tenens ANÆSTHETIST (Registrar grade) required at the above Hospital (recognised for the D.A.) for an indefinite period from 19th February, 1955. Hospital is situated within half-an-hours train journey of Central London.

Applications as soon as possible to the Group Secretary, Bleak House, Catherine-street, St. Albans.

ST. ALBANS (near), HERTFORDSHIRE. NAPSBURY HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. PSYCHIATRIC REGISTRAR (whole-time), required at above large Mental Hospital with associated outpatient clinics. Some experience in psychiatry desirable. Accommodation available. Candidates may visit the Hospital by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Napsbury Hospital Management Committee, Napsbury Hospital, near St. Albans, Herts, by 15th February, 1955.

ST. ALBANS (near), HERTFORDSHIRE. SHENLEY HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (Psychiatrist), resident or non-resident, for 1 year in the first instance, at Shenley Hospital, 16 miles from London. Opportunity for work with neurotic as well as psychotic patients, and full facilities for D.P.M. training. The Hospital may be visited by appointment.

Applications to the Medical Superintendent.

ST. HELENS AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. WHISTON HOSPITAL, PRESCOT. (892 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER (resident), Obstetrics and Gynæcology. Salary in accordance with the terms and conditions of service for medical staff. The position is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G. examination.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded to—

N. RICHARDS, Secretary.

Group Office, Whiston Hospital, Prescot.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (medical), pre-registration post, vacant 5th March. Includes dermatology.

Apply Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STAFFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics). Male or Female. Recognised for D.A. Duties mainly at General Infirmary, Stafford (175 Beds), which is the main and acute general hospital of the Group.

Applications, with copies of 3 testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STROUD GENERAL HOSPITAL, Stroud, Gloucester-SHIRE. SENIOR HOUSE OFFICER required for surgery. Post offers favourable experience for those wishing to enter General Practice. Post vacant mid-March, 1955.

Applications, naming 2 referees, to the Hospital Secretary.

VENTNOR, ISLE OF WIGHT. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST. (249 Beds.) Required, SENIOR or JUNIOR HOUSE OFFICER (resident post), vacant 24th March. Hospital has all facilities for major thoracic surgery.

Applications, with names of 2 referees, to Physician-Superintendent.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the post of RESIDENT CASUALTY OFFICER (Male or Female). The post is graded Junior Hospital Medical Officer. Scale of salary £775–£50–£1075, less a deduction of £130 for residential emoluments. Applications will also be considered from Junior Medical Officers who would be graded House Officer or Senior House Officer at the scale appropriate to the experience of the applicant. Consideration will also be given to applicants who desire the appointment on a short-term basis. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience, and qualifications, should be forwarded or telephoned to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee
c/o General Hospital, Warrington, Lancs.
(Tel. No. Warrington 1666).

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for a vacancy at the above Hospital for a RESIDENT HOUSE SURGEON (Male or Female). Recognised for pre-registration. Salary will be £425–£525 p.a., less a deduction of £125 for full residential emoluments.

Applications should be sent to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WELSH REGIONAL HOSPITAL BOARD. Registrar (general surgery), St. Woolos Hospital, Newport, Mon. (379 Beds). Post covers 56 surgical beds. Non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cardiff, within 14 days.

WEST BROMWICH AND DISTRICT GENERAL HOS-PITAL. (144 Beds.) HOUSE SURGEON (pre-registration), vacant 1st April, 1955.

Applications, with 3 recent testimonials, to Group Secretary, West Bromwich and District Hospital Management Committee, Edward-street, West Bromwich.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOS-PITAL. (311 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience available under Area Orthopædic team. Appointment for 6 months in first instance. Vacant 8th March.

Applications, with copies of 2 testimonials, to the Secretary.

WORCESTER (near). POWICK HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). The post offers experience in all branches of psychiatry, including all forms of modern treatment and outpatient clinics. The Hospital has a high admission-rate, is recognised for the D.P.M., and has associated Child Guidance Clinics and a Mental Deficiency Institute similarly recognised. Arrangements are made for Medical Officers to attend at the Birmingham Medical School for instruction in neurology.

Applications, with full details and the names of 2 referees, to be forwarded to the Medical Superintendent.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of PÆDIATRIC HOUSE PHYSICIAN at the above Hospital. The post is a pre-registration one and is recognised for the D.C.H.

Applications, stating age with details of previous experience and names of 2 referees, should be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM. WAR MEMORIAL HOSPITAL. (230 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WARWICK HOSPITAL. (350 Beds.) Resident Pædiatric HOUSE PHYSICIAN (Male or Female), vacant 15th March. 30-Bedded Unit. Post recognised D.C.H. and pre-registration.

Apply Medical Superintendent.

WARWICK (near). KING EDWARD VII MEMORIAL CHEST HOSPITAL. (225 Beds.) SENIOR HOUSE OFFICER (resident desirable). Hospital is modern one with Thoracic Surgical Unit.

Applications to Medical Superintendent.

WOLVERHAMPTON GROUP.

New Cross Hospital, Wolverhampton

HOUSE OFFICER (general surgery). Pre-registration post. Vacant 28th February.

Apply Secretary, The Royal Hospital, Wolverhampton.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Broadgate (Mental) Hospital, Beverley, Yorkshire (650 Beds)

JUNIOR HOSPITAL MEDICAL OFFICERS (2) required now. Time for studying. Salary £775–£50–£1075.

Detailed applications to Group Secretary, Westwood Hospital, Beverley.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, Yorks. (207 Beds)

HOUSE SURGEON (first, second, or third post), vacant mid-February. General surgical duties some orthopædics. Offering good opportunity for general experience in busy acute General Hospital. Recognised for F.R.C.S. Approved pre-registration post. Fully-qualified practitioners may apply.

Apply Group Secretary.

BRITISH COLUMBIA. CHILDREN'S HOSPITAL, 250, West 59th-avenue, VANCOUVER 15, BRITISH COLUMBIA, CANADA. 2 PÆDIATRIC RESIDENTS required for a period of 1 year, commencing 1st July, 1955, for 83-Bed children's general hospital. University teaching programme. Accommodation available. Remuneration $175 per month, less $15 per month accommodation. Meals available if required.

Applications, stating age, qualifications, nationality, accompanied by recent references and photograph, should be forwarded by air-mail to the Administrator.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES Applications are invited for 2 posts of REGISTRAR or SENIOR REGISTRAR in the division of surgery at the above-named Teaching Hospital which is in special relationship with the University of London. Applicants should possess a higher qualification in surgery. The successful candidates will be required to assume duties as soon as possible after 15th March and 1st June, 1955. The appointments will each be for 1 year in the first instance, subject to renewal. Salary is payable within the scale £800–£100–£1000/£1100–£100–£1400 p.a., depending on experience and qualifications. Single accommodation and board or a limited number of unfurnished flats for unmarried or married Officers, are provided at a deduction of £125 p.a. or 5% of salary, respectively. Return first-class passage by sea will be paid for 1 person only in each case.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital, Mona P.O., Jamaica, B.W.I., to whom applications, stating age, nationality and details of qualifications and experience, together with 3 recent testimonials or the names and addresses of 3 referees, should be sent by 28th February, 1955.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for the post of REGISTRAR in the Division of Medicine at the above-named Teaching Hospital which is in special relationship with the University of London. Higher qualifications desirable but not essential. The successful candidate will be required to be in Jamaica as early as possible after appointment. The appointment will be for 1 year in the first instance, subject to renewal. Salary is payable within the scale £800–£100–£1000/£1100–£100–£1400 p.a., depending on experience and qualifications. Single accommodation and board, or a limited number of unfurnished flats for unmarried or married Officers, are provided at a deduction of £125 p.a. or 5% of salary, respectively. Return first-class passage by sea will be paid for 1 person only.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital, Mona P.O., Jamaica, B.W.I., to whom applications, stating age, nationality and details of qualifications and experience, together with 3 recent testimonials or the names and addresses of 3 referees, should be sent by 28th February, 1955.

IBADAN, NIGERIA. UNIVERSITY COLLEGE HOSPITAL. The Board of Management invites applications for the undermentioned appointments :—

(*a*) SENIOR REGISTRAR (clinical pathology).

(*b*) REGISTRAR (clinical pathology).

Applicants for post (*a*) should preferably hold either the M.D. (Pathology) or a higher medical qualification. The Departments of Bacteriology and Morbid Anatomy are professorial units. There are at present Departments of Bacteriology, Chemical Pathology and Morbid Anatomy. Successful candidates will be given an opportunity of working in all 3 departments in rotation.

Salaries : Post (*a*) £1308 p.a. plus expatriation pay, where applicable, of £300 p.a. ; Post (*b*) £1020 p.a., plus expatriation pay, where applicable, of £240 p.a. A gratuity at the rate of £37 10s. for each completed period of 3 months service is payable on satisfactory completion of contract. Contracts will be for 1 tour of 12 months in the first instance. Outfit allowance of £60 is payable on first appointment. Liberal leave with free first-class passages for expatriate Officer and his wife will be granted on full pay on completion of tour. Officers are eligible for children's allowances. Partly furnished quarters are provided at a rental of 10% of salary, excluding expatriation pay.

Applications should be submitted not later than 21st February, 1955, on the appropriate form, which can be obtained, with further particulars, on receipt of an addressed foolscap envelope, from the Adviser on Staff Recruitment, University College Hospital, Ibadan, 57, Catherine-place, London, S.W.1.

U.S.A. RICHMOND, VIRGINIA. HOSPITAL DIVISION, MEDICAL COLLEGE OF VIRGINIA. Positions open for ASSISTANT RESIDENT and JUNIOR ASSISTANT RESIDENT training beginning 1st July, 1955. 3-year training programme approved by the American Medical Association and the American Board of Psychiatry and Neurology.

Send applications to Doctor R. FINLEY GAYLE, Jr., Professor of Psychiatry, Medical College of Virginia, Richmond 19, Virginia, for details concerning formal training programme and salary.

U.S.A. ST. ELIZABETH HOSPITAL, Elizabeth, N.J., U.S.A. (250 Beds.) Applications are invited to fill vacancies for 2 INTERNS to serve for 1 year. Hospital approved by A.M.A. Intern training being conducted. Salary $100 plus maintenance.

Apply Administrator.

Public Appointments

ROYAL ARMY MEDICAL CORPS. For new conditions and terms of service see page 33.

BUCKINGHAMSHIRE. COUNTY OF BUCKS. Applications are invited from registered medical practitioners holding the qualifications prescribed by the Sanitary Officers (Outside London) Regulations, 1935 and 1951, for the whole-time joint appointment of ASSISTANT COUNTY MEDICAL OFFICER AND DEPUTY MEDICAL OFFICER OF HEALTH for the Borough of Buckingham, the Bletchley, Linslade and Newport Pagnell Urban Districts, and the Buckingham, Newport Pagnell and Wing Rural Districts. Salary within the scale of £996–£1334 p.a. Travelling and subsistence allowances will be paid on the appropriate Council's scale. The appointment is superannuable.

Further particulars and forms of application may be obtained from the undersigned, to whom applications must be delivered by 25th February, 1955.

GUY R. CROUCH, Clerk of the Bucks County Council.

County Hall, Aylesbury, January, 1955.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctor are vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
STAPLEFORD ..	NOTTINGHAM ..	19TH FEBRUARY, 1955
SPILSBY ..	LINCOLN ..	19TH FEBRUARY, 1955
RICHMOND ..	YORK ..	19TH FEBRUARY, 1955
PORTREE ..	INVERNESS ..	19TH FEBRUARY, 1955
MARKET RASEN ..	LINCOLN ..	19TH FEBRUARY, 1955

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—TRINIDAD. SURGEON required to undertake full-time duties at the Caura Sanatorium, Trinidad. Candidates should possess medical qualifications registrable in the United Kingdom, and F.R.C.S. or higher degree in surgery and have had considerable experience in thoracic surgery. Appointments can be made on a permanent basis with pension (non-contributory) at the age of 60, or on short-term agreement. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights up to 6 years and receive a gratuity (taxable) of 20% of the aggregate of their salary after their engagement. Salary scale ranges from £1500 to £1600 a year. Consulting practice is allowed or an allowance of £200 a year is payable in lieu. Pension is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service. Income-tax at local rates. Free passages are provided for Officer, wife and children, not exceeding 5 persons in all on first appointment and up to 3 adult fares on leave. Tour of service is 24–34 years. Local leave permissible and generous home leave granted after each tour.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/38/02).

NORTHAMPTONSHIRE COUNTY COUNCIL. Applications are invited from registered medical practitioners holding a D.P.H. or similar qualification for the appointment of DISTRICT MEDICAL OFFICER OF HEALTH for the Urban Districts of Burton Latimer, Corby, Desborough and Rothwell and the Rural District of Kettering AND ASSISTANT COUNTY MEDICAL OFFICER for the same area. The Officer will act under the County Medical Officer of Health as Assistant County Medical Officer. The salary scales, which are based on an equal allocation of service between the County Council and the District Councils, will be in accordance with the awards of the Industrial Court—namely (*i*) for the post of Medical Officer of Health to the District Councils—£775 p.a. by 4 annual increments of £25 to £875 p.a., and (*ii*) Assistant County Medical Officer—£593 15s. p.a. by 7 annual increments of £31 5s. to £812 10s. p.a. A travelling allowance will be paid on the scale from time to time approved by the County Council. Office accommodation and clerical assistance will be provided. The appointment is subject to (*a*) the Local Government Act, 1933, and the Sanitary Officers (Outside London) Regulations, 1935 and 1951, (*b*) the Local Government Superannuation Acts, and (*c*) the passing of a medical examination. The Officer will be required to devote his whole time to the duties of the appointment, to reside within the area for which he acts and to discharge the obligations imposed on a District Medical Officer of Health by the relevant Acts, Orders and Regulations. As regards the duties of District Medical Officer of Health, the Officer will be subject to the control and direction of the several Councils. The appointment will be determinable upon 3 months notice on either side.

Applications, stating age, qualifications and experience, with the names of 3 referees, should reach the Clerk of the County Council by 15th February, 1955. Canvassing will disqualify.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton, 19th January, 1955.

EAST MIDLANDS GAS BOARD. Applications are invited from registered medical practitioners for the post of Full-time ASSISTANT MEDICAL OFFICER, who will be required to live in the vicinity of Sheffield. Previous experience in industrial medicine and/or a Diploma in Industrial Health will be an advantage. The commencing salary for the appointment will be not less than £1500 p.a., according to qualifications and experience. The position is pensionable and the successful applicant will be required to pass a medical examination.

Applications, stating age, education, qualifications and experience and giving the names of 2 referees, should be sent to the undersigned within 14 days of the appearance of this advertisement. A. GWYNNE DAVIES, Secretary.

Beverley House, University-road, Leicester.
28th January, 1955.

LONDON COUNTY COUNCIL. Spastic Centre. Assistant TEACHER, Centre for Spastic Children, 61, Cheyne-walk, S.W.3 (this is a new unit concerned with the diagnosis and treatment of cerebral palsied children under 5 years). Qualified teachers invited to apply for appointment to the Council's permanent service and allocation in the first instance to this centre from April, 1955. Candidates should have nursery/infant experience and preferably some experience with physically handicapped/cerebral palsied children although this is not essential. Some training will be given prior to appointment. Burnham scale salary.

Apply at once on form EO/T.S.40, obtainable from and returnable to, Education Officer (EO/T.S.5), County Hall, S.E.1 (send stamped addressed envelope (foolscap)). (99).

NOTTINGHAM. CITY OF NOTTINGHAM. Health SERVICES. MEDICAL LOCUM-TENENS—Summer Period 1955. Applications are invited from medical practitioners with experience of maternal and child health for a Locum-tenens appointment from May to the end of September, 1955. Salary will be at the rate of £950 p.a.

Applications, accompanied by the names of 2 persons to whom reference may be made, should be sent to the Medical Officer of Health, Huntingdon-street, Nottingham, not later than 1st March, 1955. T. J. OWEN, Town Clerk.

Guildhall, Nottingham, January, 1955.

NOTTINGHAMSHIRE COUNTY COUNCIL. West BRIDGFORD URBAN DISTRICT COUNCIL; BINGHAM RURAL DISTRICT COUNCIL. Applications are invited from registered medical practitioners for the mixed whole-time appointment of ASSISTANT COUNTY MEDICAL OFFICER AND MEDICAL OFFICER OF HEALTH of the West Bridgford Urban District and Bingham Rural District. Applicants must have had at least 3 years professional experience since qualifying; be experienced in the duties of Medical Officer of Health, School Medical Officer, and the care of mothers and young children and possess a Diploma in Public Health.

Salaries are in accordance with Awards 2285, 2231 and 2452 of the Industrial Court for Public Health Medical Officers holding mixed appointments, namely:—

(*a*) As Assistant County Medical Officer (16/44ths) £500 p.a.–£22 14s. 6d.–£590 18s. 0d. (on scale £1100–£50–£1300 plus loading in accordance with Spens Formula).

(*b*) As Medical Officer of Health, West Bridgford Urban District (12/44ths) £422 14s. 6d.–£13 12s. 9d.–£477 5s. 6d. (on scale £1450–£50–£1650 plus 12/44ths of £100).

(*c*) As Medical Officer of Health, Bingham Rural District (16/44ths) £563 12s. 9d.–£18 3s. 8d.–£636 7s. 5d. p.a. (on scale £1450–£50–£1650 plus 16/44ths of £100).

Application forms and conditions of appointment are obtainable from my office, and applications should reach me by 4th March, 1955. Canvassing disqualifies.

A. R. DAVIS, Clerk of the County Council.

Shire Hall, Nottingham.

STATE PUBLIC SERVICE
QUEENSLAND, AUSTRALIA

MEDICAL OFFICERS, TUBERCULOSIS SERVICE

Applications are invited from qualified medical practitioners for appointment as Medical Officers, Chest Clinics, Department of Health and Home Affairs, Cairns and Townsville, with salary-range minimum £A2078 10s. p.a., maximum £A2328 10s. p.a., inclusive of present basic-wage adjustments and subject to any further such adjustments. Salary in excess of the minimum may be paid according to the qualifications and experience of appointees. An extra-cost-of-living allowance of £A25 p.a. is also payable at both Cairns and Townsville.

Applicants must be registrable as medical practitioners in Queensland. Those possessing higher qualifications will receive preference but experience in diseases of the chest is essential for appointment.

Appointees will act as Consultants in diseases of the chest to the respective Hospitals' Board and will be responsible for investigation and treatment of cases of tuberculosis at the Cairns and Townsville General Hospitals. Appointees will also be responsible for the public-health control of tuberculosis in their respective areas, including contact investigation, Mantoux Surveys, and the use of B.C.G. Vaccine.

Further particulars may be obtained from the Agent-General for Queensland, 409–410, Strand, London, W.C.2.

Applications should contain particulars of full name, date and place of birth, marital status, children (if any), and any war service, and full details of qualifications and experience, and should be accompanied by references or certified copies of references.

Applications should be forwarded by air-mail so as to reach the Secretary, Public Service Commissioner's Department, Box 488H, G.P.O., Brisbane, Australia, by 31st March, 1955.

WARRINGTON. COUNTY BOROUGH OF WARRINGTON. HEALTH DEPARTMENT. Applications are invited from suitably qualified medical Women for the appointment of ASSISTANT MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER. The salary is £950 p.a., rising by annual increments of £50 to a maximum of £1300 p.a. Experience in dealing with children is essential, but possession of the D.P.H. or D.C.H. would be an advantage. The duties will be mainly clinical in connection with Maternity and Child Welfare or School Medical Services, as may be required. A car allowance is payable. The post is superannuable and subject to a satisfactory medical examination.

Applications, giving full details of age, qualifications and experience, together with the names of 2 persons to whom reference can be made, should be forwarded to the undersigned forthwith. ERIC H. MOORE, Medical Officer of Health and Principal School Medical Officer.

Health Department, Sankey-street, Warrington.
January, 1955.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

WIVELISCOMBE, SOMERSET. Applications are invited for a death VACANCY (semi-urban). List at present 2566, all prescribing. Present accommodation doubtful. Applications on Form E.C.16A before 18th February, 1955, to—

R. W. FELTHAM, Clerk of the Somerset Executive Council.
11, Elmhyrst-road, Weston-super-Mare, Somerset.

AUSTRALIA. Unique opportunity for medical practitioner to acquire Consulting Medical Practice, with fully-equipped diagnostic laboratory in southern capital city and comfortable furnished house in seaside suburb available. Suit graduate interested in research or specialisation. Principal may be interviewed in London. Able to fly there if possible. Salaried post if preferred or may be leased, with option of purchase.

Particulars from CAMPBELL ROSS, Horton Grange, Maidenhead (Phone 20).

LAGOS, WEST AFRICA. Locum (Male) required for 6 months in busy urban and commercial practice. Salary £100 per month and all found (includes return fare, full board with service, car). Possibility of permanency. Apply by air mail to "Locum," c/o Barclays Bank D.C.O., 55, Marina, Lagos, Nigeria.

Hospital Services : Non-Medical Appointments

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.5. Applications are invited for the post of BIOCHEMIST in the Chemical Pathology Laboratory which becomes vacant on 14th March. The conditions of service are as laid down by the Professional and Technical Council of the Whitley Councils. An Honours Degree in Chemistry or an equivalent qualification will be considered an advantage.

Applications in writing, stating age, education and experience, together with the names and addresses of 2 referees, to Professor GRAY, Department of Chemical Pathology by 14th February, 1955.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL, London, S.E.1. TECHNICIAN required, experienced in biochemistry or chemical pathology.

Apply in writing to the Dean.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. SENIOR TECHNICIAN or TECHNICIAN (according to qualifications and experience) in Histology Laboratory, Pathology Department. Considerable histological experience essential and general experience in hospital laboratory technique desirable. Whitley Council terms. Further particulars from Consultant Pathologist.

Applications, naming 2 professional referees or with 2 recent testimonials, to Administrator.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

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